

L53 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2007:872491 CAPLUS <<LOGINID::20080215>>

DN 147:234741

TI preparation of oxonium and sulfonium perfluoroalkylfluorophosphonates, (fluoro)(cyano)borates, perfluoroalkylfluoroborates, and perfluoroalkylsulfonamides and their use in the production of ionic liquids.

IN Ignatyev, Nikolai; Bissky, German; Willner, Helge

PA Merck Patent GmbH, Germany

SO PCT Int. Appl., 53pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2007087949	A2	20070809	WO 2007-EP51	20070105
	WO 2007087949	A3	20071011		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW			
	RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, ME, ZM, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA			
	DE 102006005103	A1	20070809	DE 2006-102006005103	20060204
PRAI	DE 2006-102006005103	A	20060204		
OS	MARPAT 147:234741				

AB onium salts of complex fluoroalkyl and fluoro phosphate and borate anions,  $Q+[PF_x(CyF_2y+1-zHz)_6-x]^-$ ,  $Q+[BF_wRF_4-w]^-$ ,  $Q+[BF_n(CN)_4-n]^-$ ,  $Q+[(RFSO_2)_2N]^-$  (RF = perfluorinated C1-20 alkyl, C2-20 alkenyl, C2-20 alkynyl, C3-7 cycloalkyl, aryl, preferably C6F5;  $2 \leq x \leq 5$ ;  $1 \leq y \leq 8$ ;  $0 \leq z \leq 2y+1$ ;  $Q+$  = aliphatic or heterocyclic onium cation, preferably imidazolium, pyrrolidinium, guanidinium, pyridinium, triphenylmethylum), useful as components of ionic liqs. (no data) were prepared by complexation or nucleophilic substitution reactions of trialkyloxonium or trialkylsulfonium salts of the corresponding anions with salts  $Q+X^-$  ( $X^-$  = halo,  $BF_4^-$ ,  $PF_6^-$ ). thus,  $[Et_3O]+[(C_2F_5)_3PF_3]^-$  was prepared by reaction of  $[Et_3O]+[BF_4]^-$  with  $(C_2F_5)_3PF_2$  at 75-80° for 3 h in 98% yield. reaction of 1-ethyl-3-methylimidazolium chloride with  $[Et_3O]+[(C_2F_5)_3PF_3]^-$  at 70-80° for 3 h gave 1-ethyl-3-methylimidazolium trifluorotris(pentafluoroethyl)phosphate in 98.9% yield.

IT 945614-36-8P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

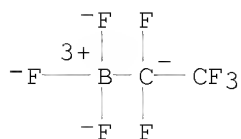
(preparation of oxonium and sulfonium perfluoroalkylfluorophosphonates, (fluoro)(cyano)borates, perfluoroalkylfluoroborates, and perfluoroalkylsulfonamides and their use in the production of ionic liqs.)

RN 945614-36-8 CAPLUS

CN Sulfonium, triethyl-, (T-4)-trifluoro(1,1,2,2,2-pentafluoroethyl)borate(1-) (1:1) (CA INDEX NAME)

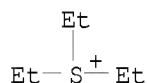
CM 1

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS

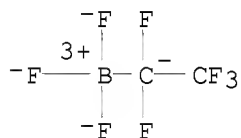


CM 2

CRN 29245-61-2  
CMF C6 H15 S



IT 476639-90-4 945614-42-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of oxonium and sulfonium perfluoroalkylfluorophosphonates,  
(fluoro)(cyano)borates, perfluoroalkylfluoroborates, and  
perfluoroalkylsulfonamides and their use in the production of ionic  
liqs.)  
RN 476639-90-4 CAPLUS  
CN Borate(1-), trifluoro(pentafluoroethyl)-, potassium, (T-4)- (9CI) (CA  
INDEX NAME)

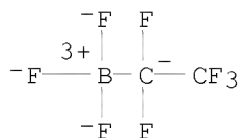


● K<sup>+</sup>

RN 945614-42-6 CAPLUS  
CN Borate(1-), trifluoro(1,1,2,2,2-pentafluoroethyl)-, hydrogen, hydrate  
(1:1:3), (T-4)- (CA INDEX NAME)

CM 1

CRN 685090-44-2  
CMF C2 B F8 . H  
CCI CCS



● H<sup>+</sup>

L53 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2007:619842 CAPLUS <<LOGINID::20080215>>  
 DN 147:72880  
 TI Preparation of phosphonium cation containing P-N bond for ionic liquid  
 IN Muraishi, Kazuki; Sueto, Kumiko; Gao, Yuan  
 PA Kanto Denka Kogyo Co., Ltd., Japan  
 SO PCT Int. Appl., 109pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2007063959	A1	20070607	WO 2006-JP323983	20061130
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRAI	JP 2005-349163	A	20051202		
	JP 2006-188910	A	20060710		
OS	MARPAT 147:72880				
GI					

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB Title compds. I [R1-R11 = H, alkyl, alkenyl, etc.; X1-X3 = N, O, S, etc.; with the proviso that two of X1-X3 can not be N simultaneously] were prepared For example, reaction of methylbis(diethylamino)phosphine, e.g., prepared from phosphorous trichloride in 2 steps, with dibutylsulfate followed by treatment with lithium N,N-bis(trifluoromethanesulfonyl)imide afforded compound II, which showed the conductivity of 0.088 Sm<sup>-1</sup> at 25°. Compds. I are claimed useful for elec. storage devices, lithium secondary batteries, etc.

IT 940911-61-5P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of phosphonium cation containing P-N bond for ionic liquid)

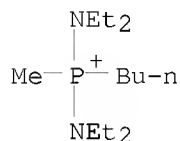
RN 940911-61-5 CAPLUS

CN Phosphorus(1+), butylbis(N-ethylethanaminato)methyl-, (T-4)-, (T-4)-trifluoro(1,1,2,2,2-pentafluoroethyl)borate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 940301-49-5

CMF C13 H32 N2 P

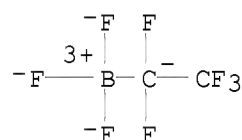


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2007:528787 CAPLUS <<LOGINID::20080215>>

DN 147:406243

TI N,N'-di(alkyloxy)imidazolium salts: new patent-free ionic liquids and NHC precatalysts

AU Laus, Gerhard; Schwaerzler, Alexander; Schuster, Philipp; Bentivoglio, Gino; Hummel, Michael; Wurst, Klaus; Kahlenberg, Volker; Loerting, Thomas; Schuetz, Johannes; Peringer, Paul; Bonn, Gunther; Nauer, Gerhard; Schottenberger, Herwig

CS Institute of General, Inorganic and Theoretical Chemistry, University of Innsbruck, Innsbruck, 6020, Austria

SO Zeitschrift fuer Naturforschung, B: Chemical Sciences (2007), 62(3), 295-308

CODEN: ZNBSEN; ISSN: 0932-0776

PB Verlag der Zeitschrift fuer Naturforschung

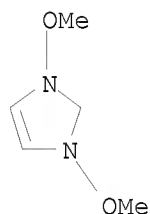
DT Journal

LA English

AB 1-Hydroxyimidazole-3-oxides (2-H, 2-Me) were alkylated with (RO)2SO2 (R = Me, Et) to give the new 1,3-di(alkyloxy)imidazolium cations which were isolated as hexafluorophosphates. Ion metathesis yielded new hydrophobic ionic liqs. (bis(trifluoromethanesulfonyl)imides,

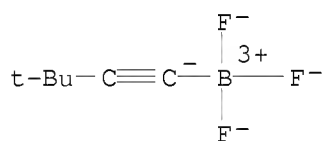
tris(pentafluoroethyl)trifluorophosphates). Bromination afforded 2-bromo derivs. which were converted to Ni and Pd N-heterocyclic carbene complexes by oxidative insertion. Fifteen crystal structures were determined by X-ray diffraction. The N-alkyloxy groups are twisted out of the imidazole ring plane and adopt either syn or anti conformations in the solid state.

IT 951021-05-9P 951021-13-9P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (crystallog. study on N,N'-di(alkyloxy)imidazolium salts)  
 RN 951021-05-9 CAPLUS  
 CN 1H-Imidazolium, 1,3-dimethoxy-, (T-4)-(3,3-dimethyl-1-butyne-1-yl)trifluoroborate(1-) (1:1) (CA INDEX NAME)  
 CM 1  
 CRN 951020-80-7  
 CMF C5 H9 N2 O2

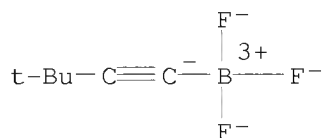


ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2  
 CRN 751479-86-4  
 CMF C6 H9 B F3  
 CCI CCS



RN 951021-13-9 CAPLUS  
 CN Borate(1-), (3,3-dimethyl-1-butyne-1-yl)trifluoro-, sodium (1:1), (T-4)-  
 (CA INDEX NAME)



● Na<sup>+</sup>

RE.CNT 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2007:284176 CAPLUS <<LOGINID::20080215>>  
DN 146:350120  
TI The reference electrode, the salt bridge, and the ion concentration measurement apparatus using them  
IN Kakiuchi, Takashi; Shibata, Manabu; Nomura, Satoshi; Iwamoto, Yoshikazu; Yamanuki, Mikito  
PA Kyoto University, Japan; Horiba, Ltd.  
SO Jpn. Kokai Tokkyo Koho, 26pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007064971	A	20070315	JP 2006-212472	20060803
	US 2008000771	A1	20080103	US 2006-432973	20060512
PRAI	JP 2005-224955	A	20050803		

OS MARPAT 146:350120

AB The disclosed reference electrode comprising internal electrode, internal electrolyte solution, and bridge which connect the internal solution with outside is characterized in that the bridge is formed by using gelated hydrophobic ionic liquid The reference electrode which the supplement of stopper and the internal liquid The reference electrode have long service life and give highly accurate measurement.

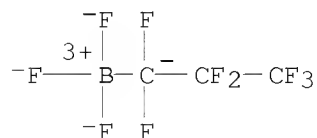
IT 929115-21-9  
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(reference electrode salt bridge made of gelated hydrophobic ionic liquid of)

RN 929115-21-9 CAPLUS

CN 1-Hexanaminium, N,N,N-trihexyl-, (T-4)-trifluoro(1,1,2,2,3,3,3-heptafluoropropyl)borate(1-) (1:1) (CA INDEX NAME)

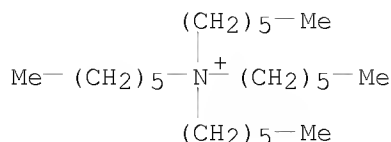
CM 1

CRN 658698-74-9  
CMF C3 B F10  
CCI CCS



CM 2

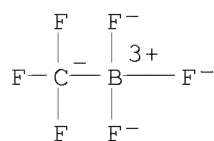
CRN 20256-54-6  
CMF C24 H52 N



L53 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2007:278683 CAPLUS <<LOGINID::20080215>>  
 DN 147:80536  
 TI Novel hydrophobic ionic liquids based on quaternary ammonium and perfluoroalkyltrifluoroborate  
 AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki  
 CS Research Institute for Ubiquitous Energy Devices, National Institute of Advanced Industrial Science and Technology, 1-8-31 Midorigaoka, Ikeda, Osaka, 563-8577, Japan  
 SO Proceedings - Electrochemical Society (2006), 2004-24(Molten Salts XIV), 359-375  
 CODEN: PESODO; ISSN: 0161-6374  
 PB Electrochemical Society  
 DT Journal  
 LA English  
 AB A novel class of low-melting, hydrophobic ionic liqs. based on relatively small aliphatic quaternary ammonium cations ( $[\text{R}_1\text{R}_2\text{R}_3\text{NR}]^+$ , wherein  $\text{R}_1, \text{R}_2, \text{R}_3 = \text{CH}_3$  or  $\text{C}_2\text{H}_5$ ,  $\text{R} = \text{n-C}_3\text{H}_7$ ,  $\text{n-C}_4\text{H}_9$ ,  $\text{CH}_2\text{CH}_2\text{OCH}_3$ ) and perfluoroalkyltrifluoroborate anions ( $[\text{RFBF}_3]^-$ ,  $\text{RF} = \text{CF}_3$ ,  $\text{C}_2\text{F}_5$ ,  $\text{n-C}_3\text{F}_7$ ,  $\text{n-C}_4\text{F}_9$ ) have been prepared and characterized. The important physicochem. and electrochem. properties of these salts including m.p., glass transition, viscosity, ionic conductivity, and electrochem. stability, have been determined and comparatively studied with those of the corresponding  $[\text{BF}_4]^-$  and  $[(\text{CF}_3\text{SO}_2)_2\text{N}]^-$ -based ones. The influence of the structure variation in the quaternary ammonium cation and perfluoroalkyltrifluoroborate ( $[\text{RFBF}_3]^-$ ) anion on the above physicochem. properties is discussed. Most of these salts are liqs. at 25 °C and exhibit low viscosities (58-210 cP at 25 °C) and moderate conductivities (1.1-3.8 mS cm<sup>-1</sup>). The electrochem. windows of these salts are much larger than those of the corresponding 1,3-dialkylimidazolium salts. Addnl., a number of the salts with  $[\text{RFBF}_3]^-$  show plastic crystal behavior.

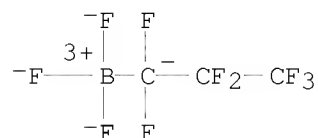
IT 42298-15-7 329065-90-9 476639-90-4  
 476639-91-5  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (starting materials in synthesis of alkylammonium perfluoroalkyl trifluoroborates)

RN 42298-15-7 CAPLUS  
 CN Borate(1-), trifluoro(trifluoromethyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)

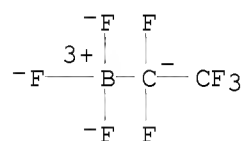


● K<sup>+</sup>

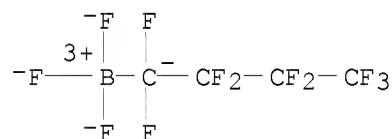
RN 329065-90-9 CAPLUS  
 CN Borate(1-), trifluoro(heptafluoropropyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



RN 476639-90-4 CAPLUS  
 CN Borate(1-), trifluoro(pentafluoroethyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)

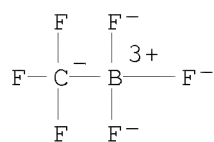


RN 476639-91-5 CAPLUS  
 CN Borate(1-), trifluoro(nonafluorobutyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)

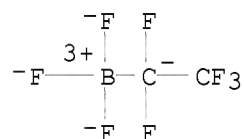


IT 2836-98-8P 685090-44-2P 685090-45-3P  
 685090-46-4P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (starting materials in synthesis of alkylammonium perfluoroalkyl trifluoroborates)  
 RN 2836-98-8 CAPLUS  
 CN Borate(1-), trifluoro(trifluoromethyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)

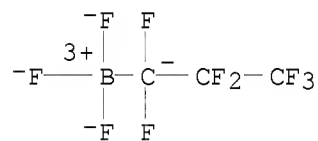




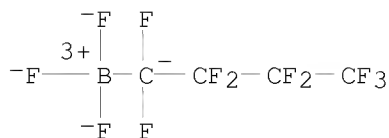
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 CN Borate(1-), trifluoro(pentafluoroethyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



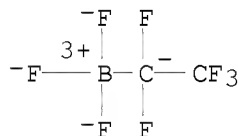
RN 685090-45-3 CAPLUS  
 CN Borate(1-), trifluoro(heptafluoropropyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



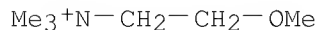
RN 685090-46-4 CAPLUS  
 CN Borate(1-), trifluoro(nonafluorobutyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



IT 749879-29-6P 749879-30-9P 749879-31-0P  
 749879-32-1P 847452-28-2P 847452-29-3P  
 847452-30-6P 847452-31-7P 847452-32-8P  
 847452-33-9P 847452-34-0P 847452-35-1P  
 847452-36-2P 847452-37-3P 847452-38-4P  
 847452-39-5P 847452-40-8P 847452-41-9P  
 847452-43-1P 847452-44-2P 847452-45-3P  
 847452-46-4P 847452-47-5P 847452-48-6P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and properties of alkylammonium perfluoroalkyl  
 trifluoroborate ionic liqs.)  
 RN 749879-29-6 CAPLUS  
 CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS

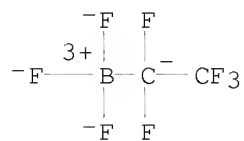


CM 2  
 CRN 25728-47-6  
 CMF C6 H16 N O



RN 749879-30-9 CAPLUS  
 CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 390750-62-6  
 CMF C2 B F8

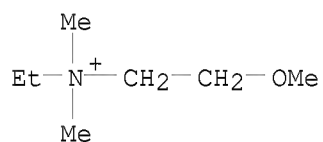
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CM 2

CRN 101853-27-4

CMF C7 H18 N O



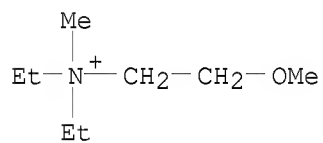
RN 749879-31-0 CAPLUS

CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-71-7

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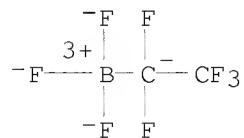


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 749879-32-1 CAPLUS

CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

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CRN 464927-73-9

CMF C9 H22 N O

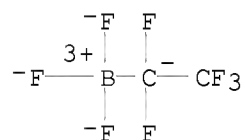
$\text{Et}_3\text{N}^+ - \text{CH}_2 - \text{CH}_2 - \text{OMe}$

CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



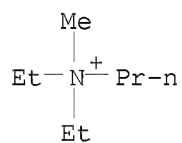
RN 847452-28-2 CAPLUS

CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 80587-93-5

CMF C8 H20 N

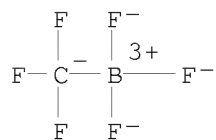


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS

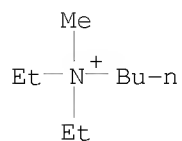


RN 847452-29-3 CAPLUS  
 CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 51002-64-3

CMF C9 H22 N

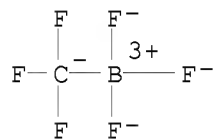


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



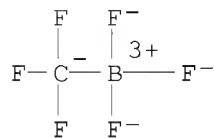
RN 847452-30-6 CAPLUS  
 CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 44629-17-6

CMF C B F6

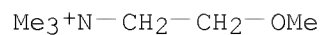
CCI CCS



CM 2

CRN 25728-47-6

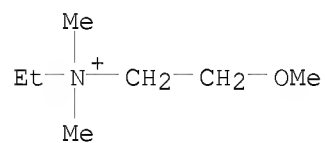
CMF C6 H16 N O



RN 847452-31-7 CAPLUS  
 CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
 trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

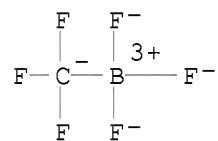
CM 1

CRN 101853-27-4  
 CMF C7 H18 N O



CM 2

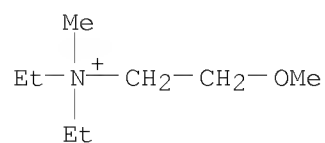
CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



RN 847452-32-8 CAPLUS  
 CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
 trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

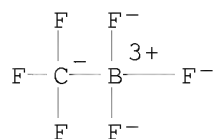
CRN 464927-71-7  
 CMF C8 H20 N O



CM 2

CRN 44629-17-6  
 CMF C B F6

CCI CCS



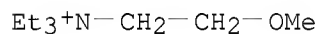
RN 847452-33-9 CAPLUS

CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-73-9

CMF C9 H22 N O

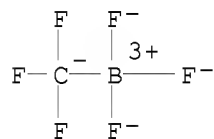


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



RN 847452-34-0 CAPLUS

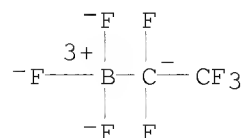
CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

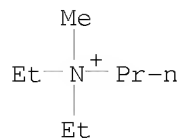
CCI CCS



CM 2

CRN 80587-93-5

CMF C8 H20 N



RN 847452-35-1 CAPLUS

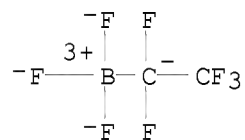
CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(pentafluoroethyl)bo  
rate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

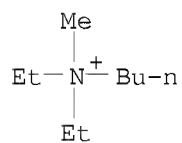
CCI CCS



CM 2

CRN 51002-64-3

CMF C9 H22 N



RN 847452-36-2 CAPLUS

CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

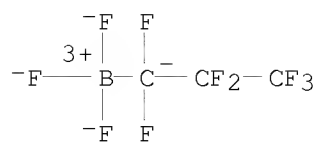
CM 1

CRN 658698-74-9

CMF C3 B F10

CCI CCS

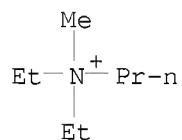




CM 2

CRN 80587-93-5

CMF C8 H20 N



RN 847452-37-3 CAPLUS

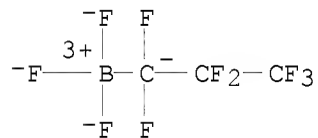
CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

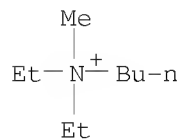
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CM 2

CRN 51002-64-3

CMF C9 H22 N



RN 847452-38-4 CAPLUS

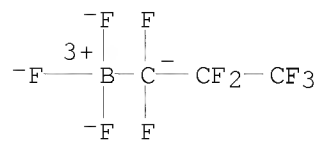
CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

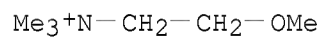
CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



RN 847452-39-5 CAPLUS

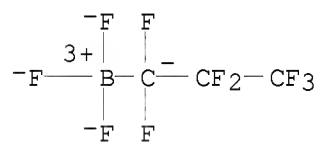
CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

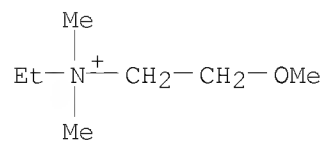
CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



RN 847452-40-8 CAPLUS

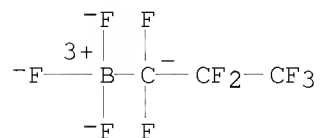
CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

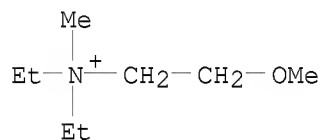
CCI CCS



CM 2

CRN 464927-71-7

CMF C8 H20 N O



RN 847452-41-9 CAPLUS

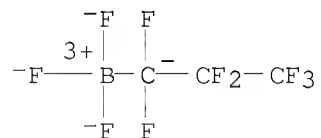
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

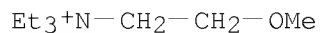
CCI CCS



CM 2

CRN 464927-73-9

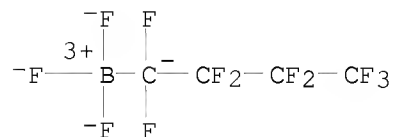
CMF C9 H22 N O



RN 847452-43-1 CAPLUS  
 CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
 trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

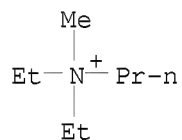
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CRN 658698-75-0  
 CMF C4 B F12  
 CCI CCS



CM 2

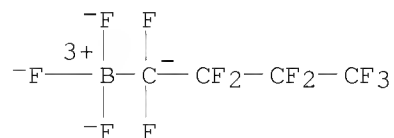
CRN 80587-93-5  
 CMF C8 H20 N



RN 847452-44-2 CAPLUS  
 CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

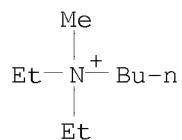
CM 1

CRN 658698-75-0  
 CMF C4 B F12  
 CCI CCS



CM 2

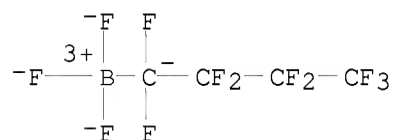
CRN 51002-64-3  
 CMF C9 H22 N



RN 847452-45-3 CAPLUS  
 CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
 trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

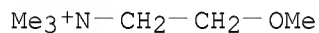
CM 1

CRN 658698-75-0  
 CMF C4 B F12  
 CCI CCS



CM 2

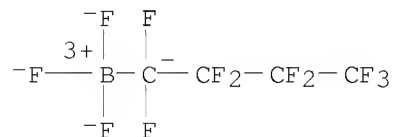
CRN 25728-47-6  
 CMF C6 H16 N O



RN 847452-46-4 CAPLUS  
 CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
 trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

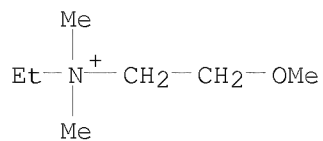
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 CMF C4 B F12  
 CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



RN 847452-47-5 CAPLUS

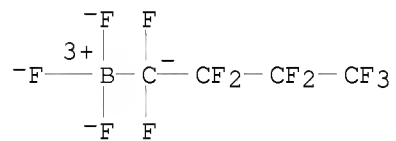
CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

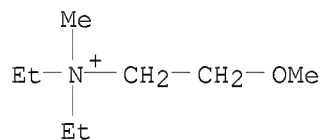
CCI CCS



CM 2

CRN 464927-71-7

CMF C8 H20 N O



RN 847452-48-6 CAPLUS

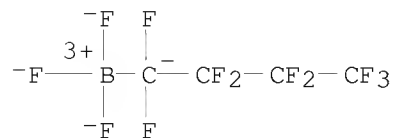
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

CCI CCS



CM 2

CRN 464927-73-9

CMF C9 H22 N O

$\text{Et}_3\text{N}-\text{CH}_2-\text{CH}_2-\text{OMe}$

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2006:950732 CAPLUS <<LOGINID::20080215>>

DN 145:317989

TI Nonaqueous electrolyte battery

IN Saruwatari, Hidesato; Kishi, Takashi; Kuboki, Takashi; Takami, Norio

PA Kabushiki Kaisha Toshiba, Japan

SO U.S. Pat. Appl. Publ., 13pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 2006204855	A1	20060914	US 2006-337513	20060124
	JP 2006253081	A	20060921	JP 2005-71446	20050314
	CN 1835272	A	20060920	CN 2006-10051573	20060306
PRAI	JP 2005-71446	A	20050314		

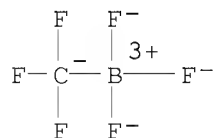
AB A nonaq. electrolyte battery, including a case, a pos. electrode housed in the case, a neg. electrode housed in the case, and a nonaq. electrolyte containing an ionic liquid and lithium ions of which molar amount is no smaller than  $1.8 \times 10^{-5}$  mol per mA-h of the battery capacity.

IT 44629-17-6

RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. electrolyte battery)

RN 44629-17-6 CAPLUS

CN Borate(1-), trifluoro(trifluoromethyl)-, (T-4)- (9CI) (CA INDEX NAME)



L53 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2006:915713 CAPLUS <<LOGINID::20080215>>

DN 145:304583

TI Ionic liquid, nonaqueous electrolyte solution, and electric charging devices provided with electrolyte solution

IN Yoshida, Hiroshi; Yuyama, Kanako; Masuda, Akira

PA Nisshin Spinning Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 19pp.

CODEN: JKXXAF

DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006236829	A	20060907	JP 2005-50919	20050225
PRAI	JP 2005-50919		20050225		

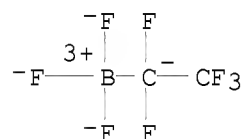
OS MARPAT 145:304583

AB The title nonaq. ionic liquid having its m.p.  $\leq 50^\circ$  is  $[\text{XR}_1\text{R}_2\text{R}_3\text{R}_4]^+ \bullet [\text{RfaBF}_4\text{-a}]^-$  and  $[\text{XR}_1\text{R}_2\text{R}_3\text{R}_4]^+ \bullet [\text{RfbBF}_6\text{-b}]^-$  and  $[\text{XR}_1\text{R}_2\text{R}_3\text{R}_4]^+ \bullet [\text{Rf}_6\text{BF}_6\text{-b}]^-$  (I, II: X = N, P; R1-4 = C1-5 alkyl, R'O(CH<sub>2</sub>)<sub>n</sub>- alkoxyl, any two of R1-R4 may form a ring with X leaving  $\geq 1$  of R1-R4 to be alkoxylalkyl; R' = Me, Et; Rf = C1-4 perfluoroalkyl; n = 1-4; a = 1-4 int., b = 1-6 int.). I and II are ionic liquid having viscosity lower than that of prior-art ionic liquid having tetrafluoroborate anion or hexafluorophosphate anion and are less reactive in hydrolysis. The noble ionic liquid is applicable to elec. charging devices such as double-layer capacitors and lithium ionic batteries.

IT 476639-90-4, Potassium pentafluoroethyltrifluoroborate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(ionic liquid, nonaq. electrolyte solution, and elec. charging devices provided with electrolyte solution)

RN 476639-90-4 CAPLUS

CN Borate(1-), trifluoro(pentafluoroethyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



● K<sup>+</sup>

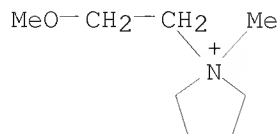
IT 834861-91-5P  
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
(ionic liquid; ionic liquid, nonaq. electrolyte solution, and elec. charging devices provided with electrolyte solution)

RN 834861-91-5 CAPLUS

CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-75-1  
CMF C8 H18 N O



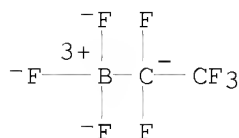


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



L53 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2006:656476 CAPLUS <<LOGINID::20080215>>

DN 145:124739

TI Preparation of ionic liquids containing  
organotrifluoroborate

IN Matsumoto, Hajime; Zhou, Zhi-Bin

PA National Institute of Advanced Industrial Science and Technology, Japan

SO PCT Int. Appl., 23 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006070545	A1	20060706	WO 2005-JP21473	20051122
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	RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
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	US 2008008930	A1	20080110	US 2007-794179	20070626
PRAI	JP 2004-375173	A	20041227		
	WO 2005-JP21473	W	20051122		

OS MARPAT 145:124739

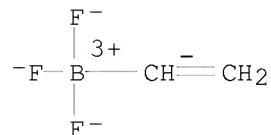
AB Ionic liqs. composed of at least one kind of anion [Z-BF3]- (wherein Z = alkyl, alkenyl, perfluoroalkenyl) and at least one kind of organic onium ion were prepared Thus, 7 examples of 1-ethyl-3-methylimidazolium·[Z-BF3]- (Z = alkyl, alkenyl, perfluoroalkenyl) were obtained by following a general procedure: reaction of 1-ethyl-3-methylimidazolium chloride with [Z-BF3]-K+ in acetone for 12 h. The κ (conductivity) value of 1-ethyl-3-methylimidazolium methyltrifluoroborate was 9.0 mS/cm. The invented ionic liqs. are claimed useful as solvents or electrolyte solns. for elec. double layer capacitors and lithium batteries.

IT 13682-77-4

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of imidazolium alkenyltrifluoroborate as ionic liquid)

RN 13682-77-4 CAPLUS

CN Borate(1-), ethenyltrifluoro-, potassium (1:1), (T-4)- (CA INDEX NAME)



IT 876025-94-4P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of imidazolium alkenyltrifluoroborate as ionic liquid)

RN 876025-94-4 CAPLUS

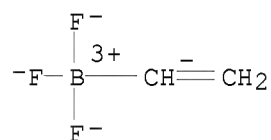
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-ethenyltrifluoroborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 715644-88-5

CMF C2 H3 B F3

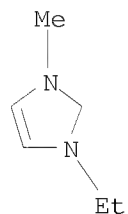
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

IT 13862-28-7 444343-55-9 872054-60-9

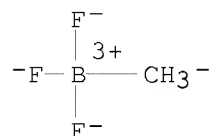
882871-21-8 897067-94-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of imidazolium alkyltrifluoroborate as ionic liquid)

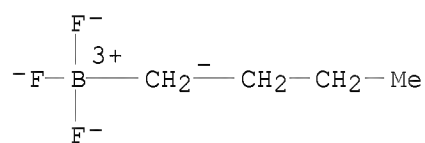
RN 13862-28-7 CAPLUS

CN Borate(1-), trifluoromethyl-, potassium, (T-4)- (9CI) (CA INDEX NAME)



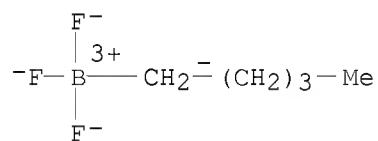
RN 444343-55-9 CAPLUS

CN Borate(1-), butyltrifluoro-, potassium, (T-4)- (9CI) (CA INDEX NAME)



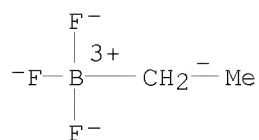
RN 872054-60-9 CAPLUS

CN Borate(1-), trifluoropentyl-, potassium, (T-4)- (9CI) (CA INDEX NAME)

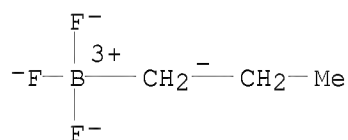


RN 882871-21-8 CAPLUS

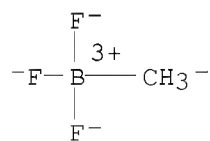
CN Borate(1-), ethyltrifluoro-, potassium, (T-4)- (9CI) (CA INDEX NAME)



RN 897067-94-6 CAPLUS  
CN Borate(1-), trifluoropropyl-, potassium, (T-4)- (9CI) (CA INDEX NAME)

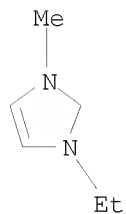


IT 876025-89-7P 876025-90-0P 876025-91-1P  
876025-92-2P 876025-93-3P  
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(preparation of imidazolium alkyltrifluoroborate as ionic liquid)  
RN 876025-89-7 CAPLUS  
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoromethylborate(1-) (9CI)  
(CA INDEX NAME)  
  
CM 1  
  
CRN 724419-60-7  
CMF C H3 B F3  
CCI CCS



CM 2

CRN 65039-03-4  
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

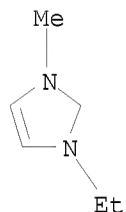
RN 876025-90-0 CAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-ethyltrifluoroborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 65039-03-4

CMF C6 H11 N2



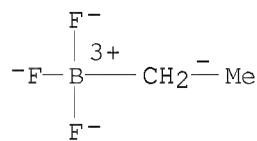
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44248-07-9

CMF C2 H5 B F3

CCI CCS



RN 876025-91-1 CAPLUS

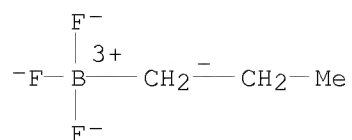
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoropropylborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 776254-48-9

CMF C3 H7 B F3

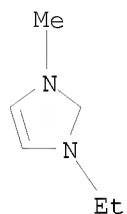
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 876025-92-2 CAPLUS

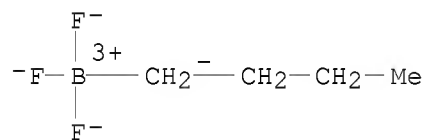
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-butyltrifluoroborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 144413-20-7

CMF C4 H9 B F3

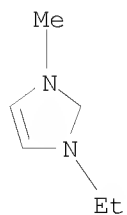
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 876025-93-3 CAPLUS

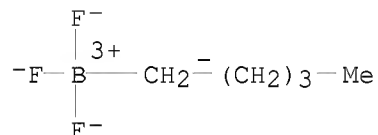
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoropentylborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 872085-50-2

CMF C5 H11 B F3

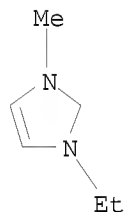
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

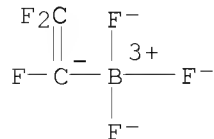
IT 380305-63-5

RL: RCT (Reactant); RACT (Reactant or reagent)

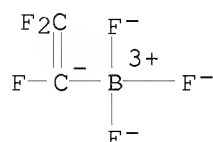
(preparation of imidazolium perfluoroalkenyltrifluoroborate as ionic liquid)

RN 380305-63-5 CAPLUS

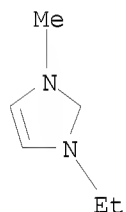
CN Borate(1-), trifluoro(trifluoroethenyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



IT 897067-87-7P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (preparation of imidazolium perfluoroalkenyltrifluoroborate as ionic liquid)  
 RN 897067-87-7 CAPLUS  
 CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(trifluoroethenyl)borate (1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 217466-74-5  
 CMF C2 B F6  
 CCI CCS



CM 2  
 CRN 65039-03-4  
 CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE  
 RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2006:270718 CAPLUS <<LOGINID::20080215>>  
 DN 144:468095  
 TI Cyclic quaternary ammonium ionic liquids with  
 perfluoroalkyltrifluoroborates: synthesis, characterization, and  
 properties  
 AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki  
 CS Research Institute for Ubiquitous Energy Devices, National Institute of  
 Advanced Industrial Science and Technology, 1-8-31 Midorigaoka, Ikeda,  
 Osaka, 563-8577, Japan  
 SO Chemistry--A European Journal (2006), 12(8), 2196-2212  
 CODEN: CEUJED; ISSN: 0947-6539  
 PB Wiley-VCH Verlag GmbH & Co. KGaA  
 DT Journal  
 LA English



OS CASREACT 144:468095

AB New cyclic quaternary ammonium salts, composed of N-R-N-methylpyrrolidinium, -oxazolidinium, -piperidinium, or -morpholinium cations (R = n-Bu, MeOCH<sub>2</sub>, MeOCH<sub>2</sub>CH<sub>2</sub>) and a perfluoroalkyltrifluoroborate anion ([RFBF<sub>3</sub>]<sup>-</sup>, RF = F<sub>3</sub>C, C<sub>2</sub>F<sub>5</sub>, n-C<sub>3</sub>F<sub>7</sub>, n-C<sub>4</sub>F<sub>9</sub>), were synthesized and characterized. Most of these salts are liqs. at room temperature. The key properties of these salts, namely, phase transitions, thermal stability, d., viscosity, conductivity, and electrochem. windows, were measured and compared

to those of their corresponding [BF<sub>4</sub>]<sup>-</sup> and [(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>N]<sup>-</sup> salts. The structural effect on all the above properties was intensively studied in terms of the identity of the cation and anion, variation of the side chain in the cation (i.e., alkyl vs. alkyl ether), and change in the length of the perfluoroalkyl group (RF) in the [RFBF<sub>3</sub>]<sup>-</sup> ion. The reduction of Li<sup>+</sup> ions and reoxidn. of Li metal took place in pure N-butyl-N-methyl-pyrrolidinium pentafluoroethyltrifluoroborate as the supporting electrolyte. Some of these new salts show desirable properties, including low m.p.s., high thermal stabilities, low viscosities, high conductivities, and wide electrochem. windows, and may thus be potential candidates for use as electrolytes in high-energy storage devices. In addition, many salts are ionic plastic crystals.

IT 834861-86-8P 834861-90-4P 834861-91-5P  
858948-62-6P 858948-63-7P 858948-65-9P  
858948-66-0P 858948-67-1P 858948-68-2P  
858948-69-3P 858948-72-8P 858948-74-0P  
858948-75-1P 858948-76-2P 858948-77-3P  
858948-78-4P 858948-79-5P 858948-80-8P  
886439-15-2P 886439-16-3P 886439-18-5P  
886439-19-6P 886439-20-9P 886439-21-0P  
886439-22-1P 886439-23-2P 886439-24-3P  
886439-25-4P 886439-26-5P 886439-27-6P  
886439-28-7P 886439-29-8P 886439-30-1P  
886439-31-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation, d., viscosity and thermal and electrochem. properties of pyrrolidinium, oxazolidinium, piperidinium or morpholinium quaternary ammonium ionic liqs.)

RN 834861-86-8 CAPLUS

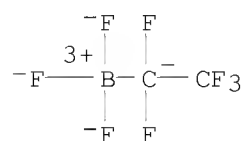
CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

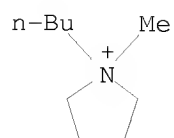
CCI CCS



CM 2

CRN 223437-10-3

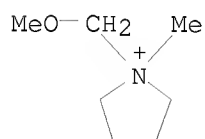
CMF C9 H20 N



RN 834861-90-4 CAPLUS  
 CN Pyrrolidinium, 1-(methoxymethyl)-1-methyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

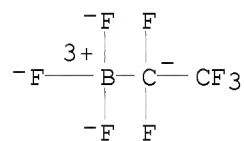
CM 1

CRN 615564-10-8  
 CMF C7 H16 N O



CM 2

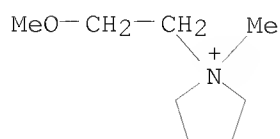
CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS



RN 834861-91-5 CAPLUS  
 CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-75-1  
 CMF C8 H18 N O

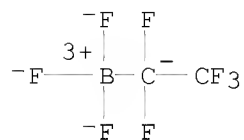


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



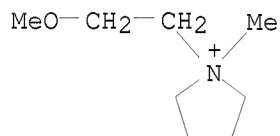
RN 858948-62-6 CAPLUS

CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-75-1

CMF C8 H18 N O

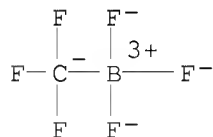


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



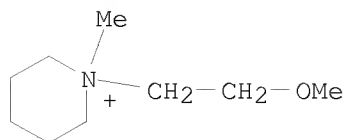
RN 858948-63-7 CAPLUS

CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-77-3

CMF C9 H20 N O

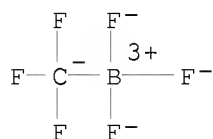


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



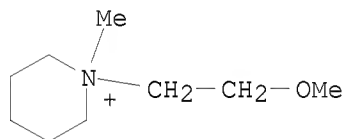
RN 858948-65-9 CAPLUS

CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-77-3

CMF C9 H20 N O

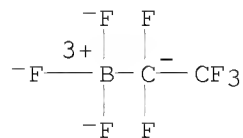


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 858948-66-0 CAPLUS

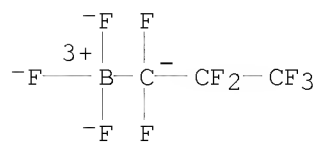
CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

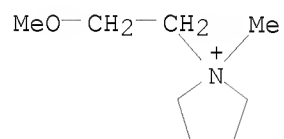
CCI CCS



CM 2

CRN 464927-75-1

CMF C8 H18 N O



RN 858948-67-1 CAPLUS

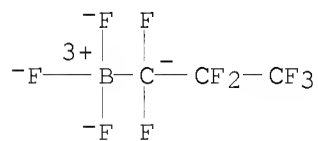
CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

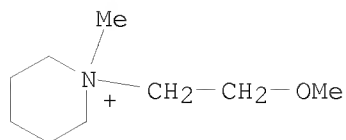
CCI CCS



CM 2

CRN 464927-77-3

CMF C9 H20 N O



RN 858948-68-2 CAPLUS

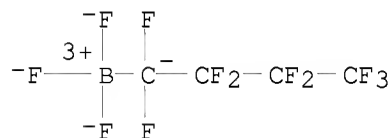
CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

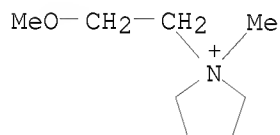
CCI CCS



CM 2

CRN 464927-75-1

CMF C8 H18 N O



RN 858948-69-3 CAPLUS

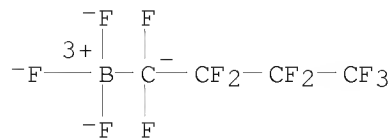
CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

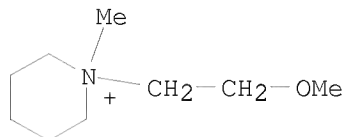
CCI CCS



CM 2

CRN 464927-77-3

CMF C9 H20 N O



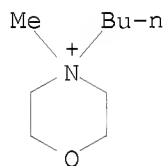
RN 858948-72-8 CAPLUS

CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 82372-00-7

CMF C9 H20 N O

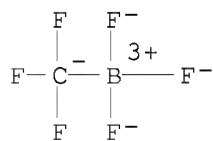


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



RN 858948-74-0 CAPLUS

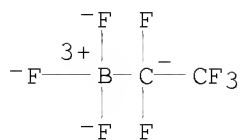
CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

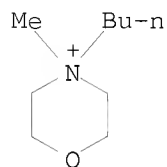
CCI CCS



CM 2

CRN 82372-00-7

CMF C9 H20 N O



RN 858948-75-1 CAPLUS

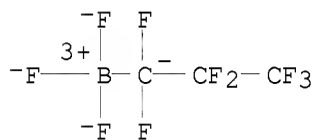
CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

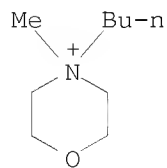
CCI CCS



CM 2

CRN 82372-00-7

CMF C9 H20 N O



RN 858948-76-2 CAPLUS

CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-



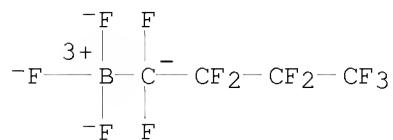
) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

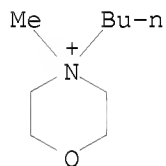
CCI CCS



CM 2

CRN 82372-00-7

CMF C9 H20 N O



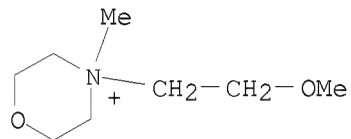
RN 858948-77-3 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

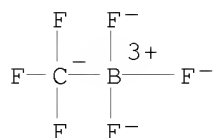


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



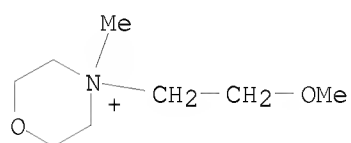
RN 858948-78-4 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

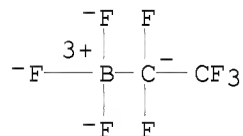


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



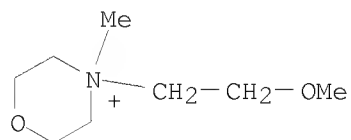
RN 858948-79-5 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

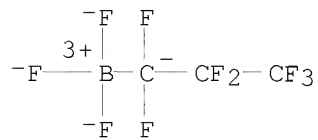


CM 2

CRN 658698-74-9

CMF C3 B F10

CCI CCS



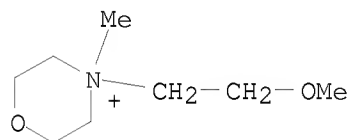
RN 858948-80-8 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

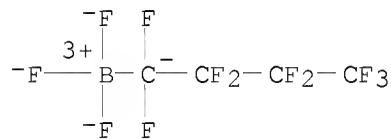


CM 2

CRN 658698-75-0

CMF C4 B F12

CCI CCS



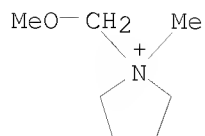
RN 886439-15-2 CAPLUS

CN Pyrrolidinium, 1-(methoxymethyl)-1-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 615564-10-8

CMF C7 H16 N O

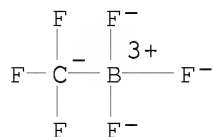


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



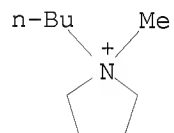
RN 886439-16-3 CAPLUS

CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 223437-10-3

CMF C9 H20 N

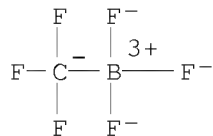


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



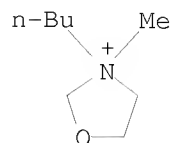
RN 886439-18-5 CAPLUS

CN Oxazolidinium, 3-butyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 886439-17-4

CMF C8 H18 N O

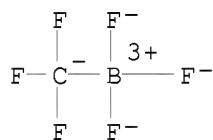


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



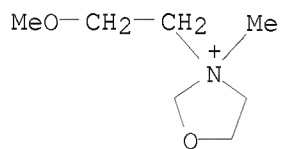
RN 886439-19-6 CAPLUS

CN Oxazolidinium, 3-(2-methoxyethyl)-3-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-02-6

CMF C7 H16 N O2

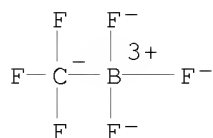


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



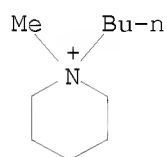
RN 886439-20-9 CAPLUS

CN Piperidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 89709-47-7

CMF C10 H22 N

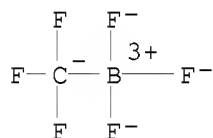


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



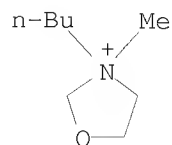
RN 886439-21-0 CAPLUS

CN Oxazolidinium, 3-butyl-3-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 886439-17-4

CMF C8 H18 N O

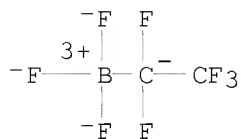


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



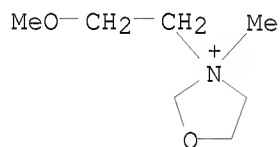
RN 886439-22-1 CAPLUS

CN Oxazolidinium, 3-(2-methoxyethyl)-3-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-02-6

CMF C7 H16 N O2

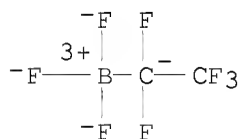


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 886439-23-2 CAPLUS

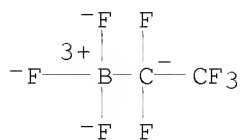
CN Piperidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-)  
) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

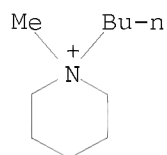
CCI CCS



CM 2

CRN 89709-47-7

CMF C10 H22 N



RN 886439-24-3 CAPLUS

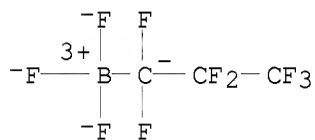
CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

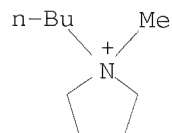
CCI CCS



CM 2

CRN 223437-10-3

CMF C9 H20 N



RN 886439-25-4 CAPLUS

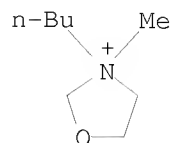
CN Oxazolidinium, 3-butyl-3-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate  
(1-) (9CI) (CA INDEX NAME)



CM 1

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CMF C8 H18 N O

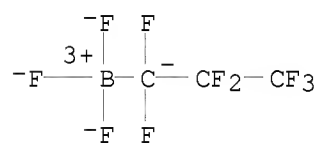


CM 2

CRN 658698-74-9

CMF C3 B F10

CCI CCS



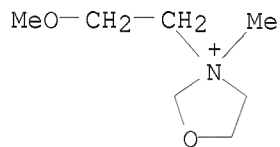
RN 886439-26-5 CAPLUS

CN Oxazolidinium, 3-(2-methoxyethyl)-3-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-02-6

CMF C7 H16 N O2

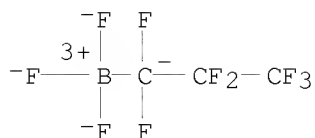


CM 2

CRN 658698-74-9

CMF C3 B F10

CCI CCS



RN 886439-27-6 CAPLUS

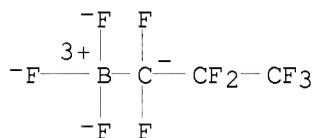
CN Piperidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

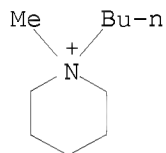
CCI CCS



CM 2

CRN 89709-47-7

CMF C10 H22 N



RN 886439-28-7 CAPLUS

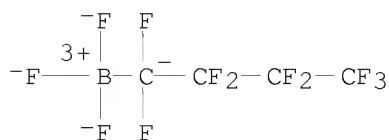
CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

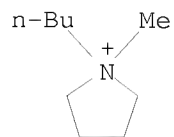
CCI CCS



CM 2

CRN 223437-10-3

CMF C9 H20 N



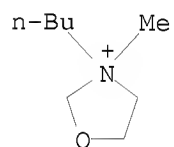
RN 886439-29-8 CAPLUS

CN Oxazolidinium, 3-butyl-3-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 886439-17-4

CMF C8 H18 N O

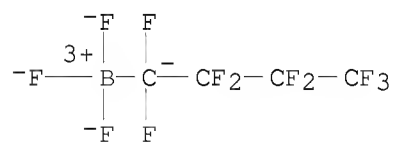


CM 2

CRN 658698-75-0

CMF C4 B F12

CCI CCS



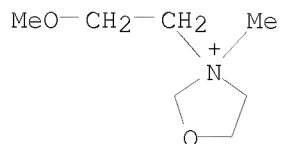
RN 886439-30-1 CAPLUS

CN Oxazolidinium, 3-(2-methoxyethyl)-3-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-02-6

CMF C7 H16 N O2

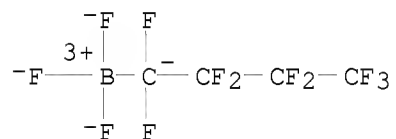


CM 2

CRN 658698-75-0

CMF C4 B F12

CCI CCS



RN 886439-31-2 CAPLUS

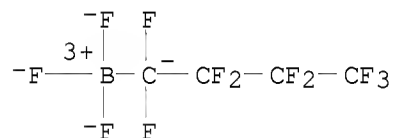
CN Piperidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

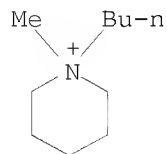
CCI CCS



CM 2

CRN 89709-47-7

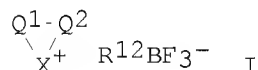
CMF C10 H22 N



RE.CNT 71 THERE ARE 71 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2005:1125512 CAPLUS <<LOGINID::20080215>>  
 DN 143:405908  
 TI Preparation of pyrrolidinium, pyridinium, and imidazolium  
 perfluoroalkyltrifluoroborates as ionic liquids.  
 IN Ignatyev, Nikolai; Welz-Biermann, Urs; Bissky, German; Willner, Helge;  
 Kucheryna, Andriy  
 PA Merck Patent GmbH, Germany  
 SO Ger. Offen., 20 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102004017026	A1	20051020	DE 2004-102004017026	20040402
	AU 2005238128	A1	20051110	AU 2005-238128	20050103
	CA 2561813	A1	20051110	CA 2005-2561813	20050103
	WO 2005105815	A1	20051110	WO 2005-EP3	20050103
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PRAI	DE 2004-102004017026	A	20040402		
	WO 2005-EP3	W	20050103		
OS	MARPAT 143:405908				
GI					



AB Title compds. [I; X = NR1, N(R1)2, Q1Q2CHR3CHR4CHR5CHR6,  
 CR2:CR3CR4:CR5CR6, CR7:CR8NR10CR9; R1 = alkyl, CH2R11; R2-R6 = alkyl;  
 R7-R9 = H, alkyl, aryl; R10 = alkyl, CH2R11; R11 = (per)fluoroalkyl; R12 =  
 perfluoroalkyl, perfluorophenyl, etc.; with specific exceptions], were  
 prepared Thus, a mixture of KF and B(OMe)3 in dimethoxyethane was treated  
 dropwise with (C2F5)2P:NSiMe3 (preparation given) followed by heating at  
 60° for 1 h. Solvent was distilled off and the oily residue in  
 dimethoxyethane was treated with HF under cooling; after stirring for 3 h  
 excess HF was removed and the residue in H2O was treated with  
 1-methyl-3-butylimidazolium chloride. The lower phase was separated to a  
 mixture containing 60 mol% 1-methyl-3-butylimidazolium

pentafluoroethyltrifluoroborate.

IT 867212-82-6P  
 RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (claimed compound; preparation of pyrrolidinium, pyridinium, and imidazolium perfluoroalkyltrifluoroborates as ionic liqs.)

RN 867212-82-6 CAPLUS

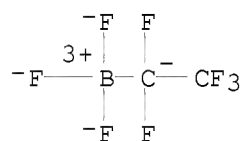
CN 1H-Imidazolium, 1-butyl-3-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
 (1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

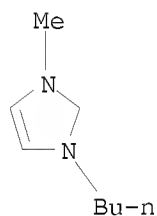
CCI CCS



CM 2

CRN 80432-08-2

CMF C8 H15 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

IT 834861-86-8P 834861-88-0P 867212-81-5P  
 867212-83-7P 867212-84-8P  
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (claimed compound; preparation of pyrrolidinium, pyridinium, and imidazolium perfluoroalkyltrifluoroborates as ionic liqs.)

RN 834861-86-8 CAPLUS

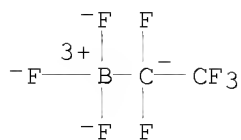
CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
 (1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

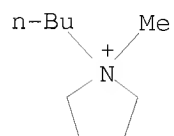
CCI CCS



CM 2

CRN 223437-10-3

CMF C9 H20 N



RN 834861-88-0 CAPLUS

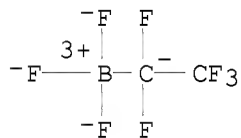
CN Pyrrolidinium, 1-hexyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

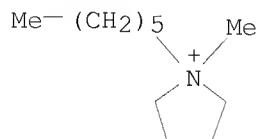
CCI CCS



CM 2

CRN 330671-30-2

CMF C11 H24 N



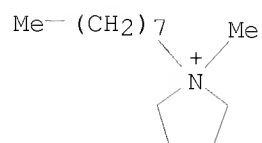
RN 867212-81-5 CAPLUS

CN Pyrrolidinium, 1-methyl-1-octyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 867212-80-4

CMF C13 H28 N

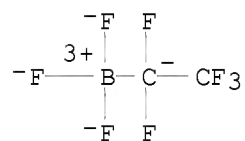


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 867212-83-7 CAPLUS

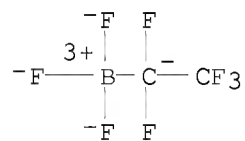
CN 1H-Imidazolium, 1-hexyl-3-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

CCI CCS

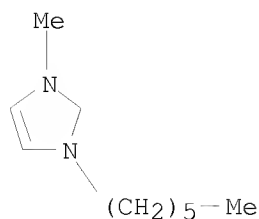


CM 2

CRN 85100-82-9

CMF C10 H19 N2





ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 867212-84-8 CAPLUS

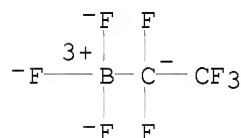
CN 1H-Imidazolium, 1-butyl-2,3-dimethyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

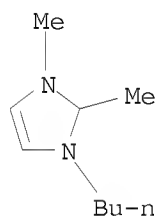
CCI CCS



CM 2

CRN 108203-89-0

CMF C9 H17 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

IT 867212-89-3P

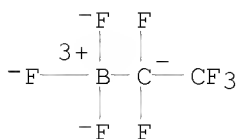
RL: NUU (Other use, unclassified); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation of pyrrolidinium, pyridinium, and imidazolium perfluoroalkyltrifluoroborates as ionic liqs.)

RN 867212-89-3 CAPLUS

CN Pyridinium, 1-butyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

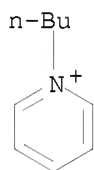
CM 1

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS

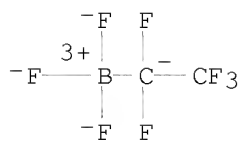


CM 2

CRN 45806-95-9  
CMF C9 H14 N



L53 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2005:813311 CAPLUS <<LOGINID::20080215>>  
DN 144:262405  
TI EQCM study of room temperature ionic liquids based on  
perfluoroethyltrifluoroborate with and without Li[BF4]  
AU Matsumoto, Hajime; Zhou, Zhi-Bin; Sakaebe, Hikari; Tatsumi, Kuniaki  
CS Research Institute for Ubiquitous Energy Devices, National Institute of  
Advanced Industrial Science and Technology (AIST), Osaka, 563-8577, Japan  
SO Electrochemistry (Tokyo, Japan) (2005), 73(8), 633-635  
CODEN: EECTFA; ISSN: 1344-3542  
PB Electrochemical Society of Japan  
DT Journal  
LA English  
AB The electrochem. behavior of room temperature ionic liqs.  
(RTILs) based on perfluoroethyltrifluoroborate ([C2F5BF3]-) was studied  
with and without Li[BF4]. The plating-stripping corresponding to the peak  
of Li could be observed on a Ni electrode in the RTIL based on a quaternary  
ammonium cation. However, the addition of .apprx.0.4 mol dm-3 of Li[BF4] had  
almost no effect on the cathodic limit potential of EMI[C2F5BF3]. The  
results of electrochem. quartz crystal microbalance (EQCM) measurements in  
propylene carbonate solution containing .apprx.2.0 mol dm-3 of RTILs and 20  
mmol  
dm-3 of LiBF4 indicate that a solid-electrolyte interface formation, which  
inhibits the reductive decomposition of the EMI cation, was not significant in  
EMI[C2F5BF3] with the addition of Li[BF4].  
IT 390750-62-6 685090-47-5 847452-35-1  
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)  
(EQCM study of room temperature ionic liqs. based on  
perfluoroethyltrifluoroborate with and without Li[BF4])  
RN 390750-62-6 CAPLUS  
CN Borate(1-), trifluoro(pentafluoroethyl)-, (T-4)- (9CI) (CA INDEX NAME)



RN 685090-47-5 CAPLUS

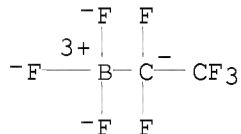
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

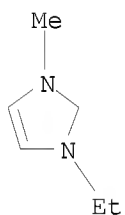
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 847452-35-1 CAPLUS

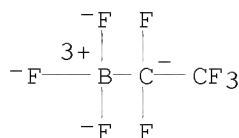
CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(pentafluoroethyl)bo  
rate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

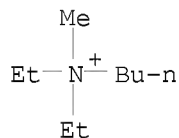
CCI CCS



CM 2

CRN 51002-64-3

CMF C9 H22 N



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:646387 CAPLUS <<LOGINID::20080215>>

DN 144:212418

TI Structure and properties of new ionic liquids based on  
alkyl- and alkenyltrifluoroborates

AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki

CS Research Institute for Ubiquitous Energy Devices, National Institute of  
Advanced Industrial Science and Technology, Osaka, 563-8577, Japan

SO ChemPhysChem (2005), 6(7), 1324-1332

CODEN: CPCHFT; ISSN: 1439-4235

PB Wiley-VCH Verlag GmbH & Co. KGaA

DT Journal

LA English

AB Low-melting, low-viscosity, hydrophilic ionic liqs.,  
which comprise 1-ethyl-3-methylimidazolium ([EMI]<sup>+</sup>) and  
alkyl(alkenyl)trifluoroborate anions ([RBF<sub>3</sub>]<sup>-</sup>, R = n-C<sub>m</sub>H<sub>2m+1</sub> (m = 1-5),  
CH<sub>3</sub>CH), were prepared and characterized. The phase-transition behavior,  
thermal stability, d., viscosity, conductivity, and surface tension of these  
salts were measured. The influence of the structural variations, such as  
changing the length and fluorination of the alkyl chain (R) in [RBF<sub>3</sub>]<sup>-</sup>, on  
the above properties was extensively studied. The low viscosity of these  
[RBF<sub>3</sub>]<sup>-</sup> salts suggests that a high degree of freedom and/or a somewhat  
flat-shaped feature in the anion make an important contribution to  
reducing the viscosity. The Walden products for each salt are not constant  
and vary with temperature, which suggests that the ions in these salts are not  
completely dissociated

IT 876025-89-7 876025-90-0 876025-91-1

876025-92-2 876025-93-3 876025-94-4

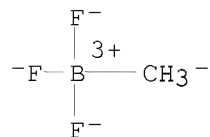
RL: PRP (Properties)

(structure and properties of ionic liqs. based on  
alkyl- and alkenyltrifluoroborates)

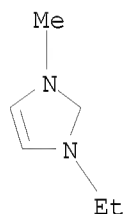
RN 876025-89-7 CAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoromethylborate(1-) (9CI)  
(CA INDEX NAME)

CM 1  
CRN 724419-60-7  
CMF C H3 B F3  
CCI CCS

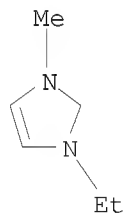


CM 2  
CRN 65039-03-4  
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE  
RN 876025-90-0 CAPLUS  
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-ethyltrifluoroborate(1-) (9CI)  
(CA INDEX NAME)

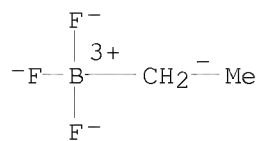
CM 1  
CRN 65039-03-4  
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2  
CRN 44248-07-9  
CMF C2 H5 B F3

CCI CCS



RN 876025-91-1 CAPLUS

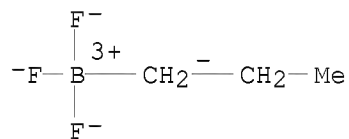
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoropropylborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 776254-48-9

CMF C3 H7 B F3

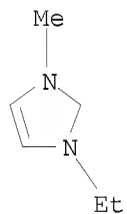
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 876025-92-2 CAPLUS

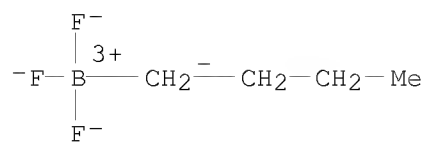
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-butyltrifluoroborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 144413-20-7

CMF C4 H9 B F3

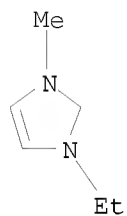
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 876025-93-3 CAPLUS

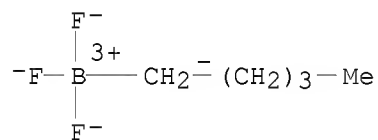
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoropentylborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 872085-50-2

CMF C5 H11 B F3

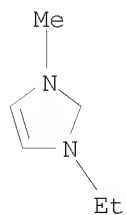
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 876025-94-4 CAPLUS

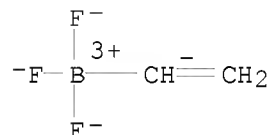
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-ethenyltrifluoroborate(1-) (9CI)  
(CA INDEX NAME)

CM 1

CRN 715644-88-5

CMF C2 H3 B F3

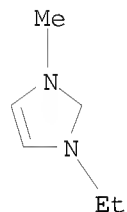
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RE.CNT 69 THERE ARE 69 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:612308 CAPLUS <<LOGINID::20080215>>

DN 143:156299

TI Ionic liquid, its manufacture, and secondary lithium  
battery and double layer capacitor comprising the liquid

IN Matsumoto, Hajime; Zhou, Zhi-Bin

PA National Institute of Advanced Industrial Science and Technology, Japan

SO PCT Int. Appl., 25 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2005063773	A1	20050714	WO 2004-JP19323	20041224
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,				
	CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,				
	GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,				



LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,  
 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,  
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,  
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
 EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,  
 RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,  
 MR, NE, SN, TD, TG

EP 1698631 A1 20060906 EP 2004-807680 20041224  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS  
 US 2007099079 A1 20070503 US 2006-596831 20060626

PRAI JP 2003-431700 A 20031226  
 JP 2004-19074 A 20040127  
 JP 2004-19076 A 20040127  
 JP 2004-94275 A 20040329  
 JP 2004-94293 A 20040329  
 JP 2004-285706 A 20040930  
 WO 2004-JP19323 W 20041224

AB The ionic liquid comprises  $\geq 1$  anion selected from  
 the group consisting of  $[\text{BF}_3(\text{C}_n\text{F}_{2n+1})]^-$  ( $n = 2, 3, \text{ or } 4$ ) and  $\geq 1$   
 organic ammonium ion. The ionic liquid is manufactured by  
 mixing a 1st compound containing the anion as anion component with a 2nd  
 compound

containing the organic ammonium ion as cation component.

IT 749879-29-6 749879-30-9 749879-31-0  
 749879-32-1 834861-85-7 834861-86-8  
 834861-87-9 834861-88-0 834861-89-1  
 834861-90-4 834861-91-5 834861-92-6  
 834861-93-7 847452-29-3 847452-31-7  
 847452-32-8 847452-33-9 847452-35-1  
 847452-38-4 847452-39-5 847452-40-8  
 847452-41-9 847452-46-4 847452-47-5  
 847452-48-6 858948-61-5 858948-62-6  
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 858948-69-3 858948-70-6 858948-71-7  
 858948-72-8 858948-74-0 858948-75-1  
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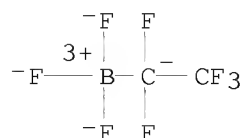
RL: TEM (Technical or engineered material use); USES (Uses)  
 (compsn. of organic ammonium salts for electrolytes in secondary lithium  
 batteries and double-layer capacitors)

RN 749879-29-6 CAPLUS

CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

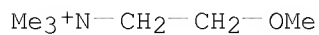
CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



RN 749879-30-9 CAPLUS

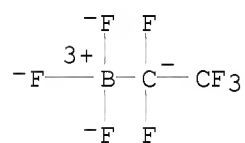
CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

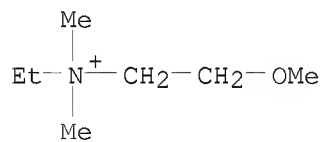
CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



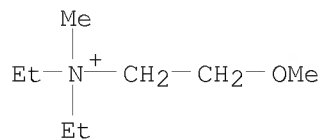
RN 749879-31-0 CAPLUS

CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-71-7

CMF C8 H20 N O

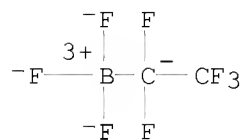


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



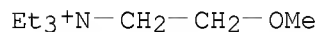
RN 749879-32-1 CAPLUS

CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-73-9

CMF C9 H22 N O

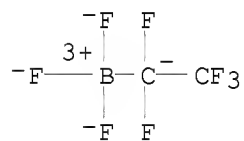


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 834861-85-7 CAPLUS

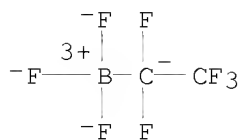
CN Pyrrolidinium, 1-methyl-1-propyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

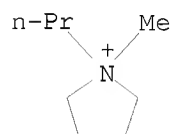
CCI CCS



CM 2

CRN 108259-90-1

CMF C8 H18 N



RN 834861-86-8 CAPLUS

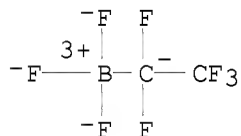
CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

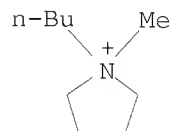
CCI CCS



CM 2

CRN 223437-10-3

CMF C9 H20 N



RN 834861-87-9 CAPLUS

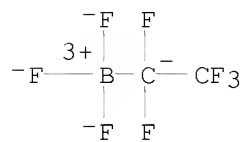
CN Pyrrolidinium, 1-methyl-1-pentyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

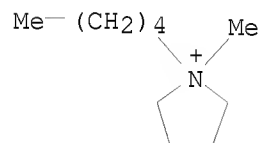
CCI CCS



CM 2

CRN 58875-50-6

CMF C10 H22 N



RN 834861-88-0 CAPLUS

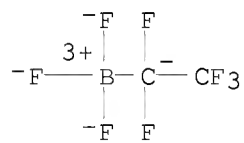
CN Pyrrolidinium, 1-hexyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

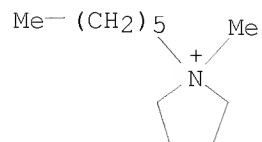
CCI CCS



CM 2

CRN 330671-30-2

CMF C11 H24 N



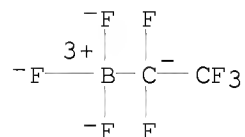
RN 834861-89-1 CAPLUS  
 CN Pyrrolidinium, 1-heptyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
 (1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

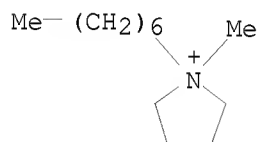
CCI CCS



CM 2

CRN 330671-32-4

CMF C12 H26 N

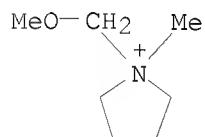


RN 834861-90-4 CAPLUS  
 CN Pyrrolidinium, 1-(methoxymethyl)-1-methyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 615564-10-8

CMF C7 H16 N O

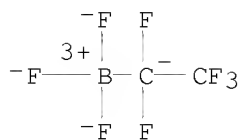


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



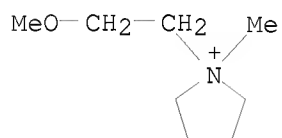
RN 834861-91-5 CAPLUS

CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-75-1

CMF C8 H18 N O

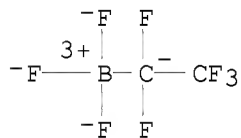


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 834861-92-6 CAPLUS

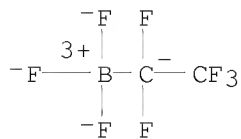
CN Pyrrolidinium, 1-(2-ethoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

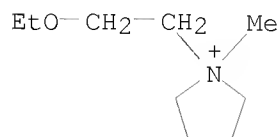
CCI CCS



CM 2

CRN 23671-55-8

CMF C9 H20 N O



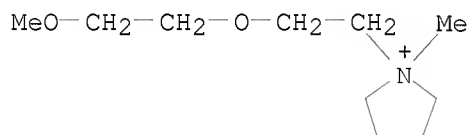
RN 834861-93-7 CAPLUS

CN Pyrrolidinium, 1-[2-(2-methoxyethoxy)ethyl]-1-methyl-,  
(T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 743436-79-5

CMF C10 H22 N O2

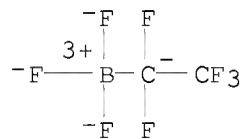


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 847452-29-3 CAPLUS

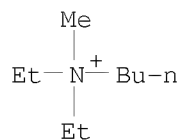
CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 51002-64-3

CMF C9 H22 N



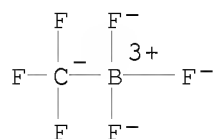


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



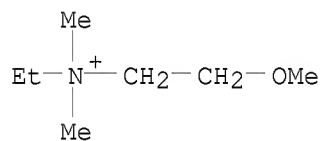
RN 847452-31-7 CAPLUS

CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 101853-27-4

CMF C7 H18 N O

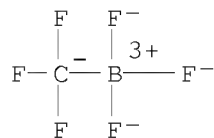


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



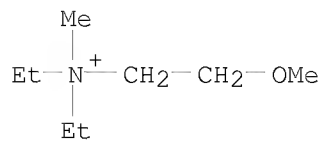
RN 847452-32-8 CAPLUS

CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-71-7

CMF C8 H20 N O

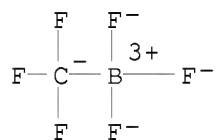


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



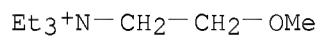
RN 847452-33-9 CAPLUS

CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-73-9

CMF C9 H22 N O

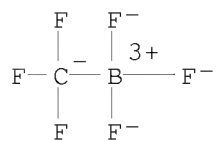


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



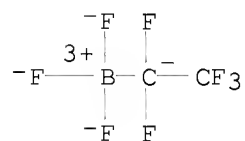
RN 847452-35-1 CAPLUS  
 CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(pentafluoroethyl)bo  
 rate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

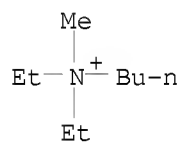
CCI CCS



CM 2

CRN 51002-64-3

CMF C9 H22 N



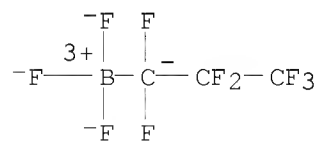
RN 847452-38-4 CAPLUS  
 CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
 trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

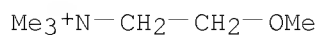
CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



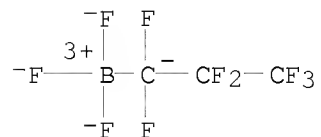
RN 847452-39-5 CAPLUS  
 CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
 trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

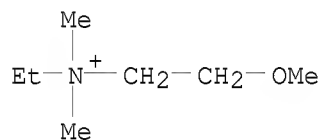
CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



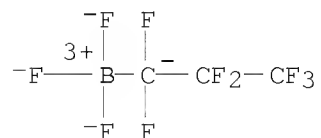
RN 847452-40-8 CAPLUS  
 CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
 trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

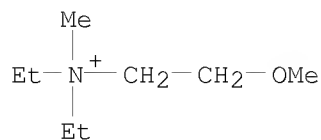
CCI CCS



CM 2

CRN 464927-71-7

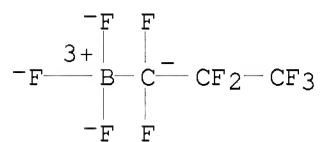
CMF C8 H20 N O



RN 847452-41-9 CAPLUS  
 CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
 trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

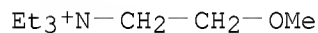
CM 1

CRN 658698-74-9  
 CMF C3 B F10  
 CCI CCS



CM 2

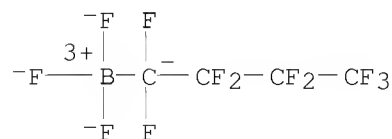
CRN 464927-73-9  
 CMF C9 H22 N O



RN 847452-46-4 CAPLUS  
 CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
 trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

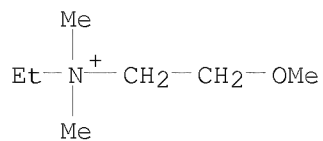
CRN 658698-75-0  
 CMF C4 B F12  
 CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



RN 847452-47-5 CAPLUS

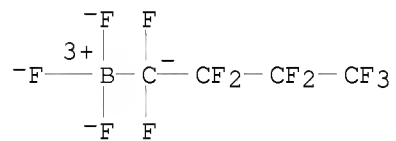
CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

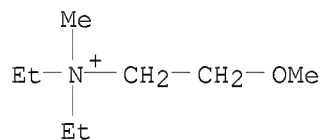
CCI CCS



CM 2

CRN 464927-71-7

CMF C8 H20 N O



RN 847452-48-6 CAPLUS

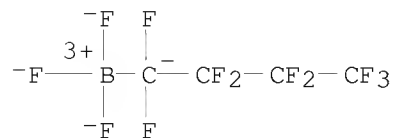
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

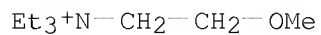
CCI CCS



CM 2

CRN 464927-73-9

CMF C9 H22 N O



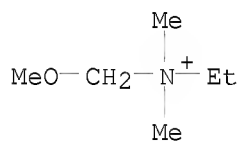
RN 858948-61-5 CAPLUS

CN Ethanaminium, N-(methoxymethyl)-N,N-dimethyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 97291-97-9

CMF C6 H16 N O

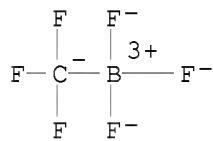


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



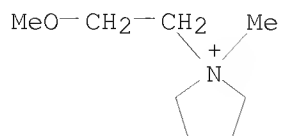
RN 858948-62-6 CAPLUS

CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-75-1

CMF C8 H18 N O

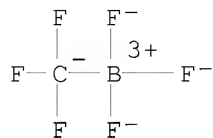


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



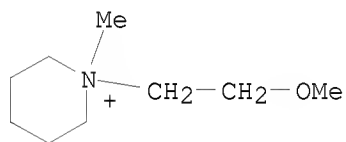
RN 858948-63-7 CAPLUS

CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-77-3

CMF C9 H20 N O

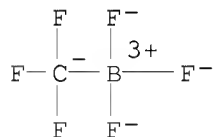


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



RN 858948-64-8 CAPLUS

CN Ethanaminium, N-(methoxymethyl)-N,N-dimethyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

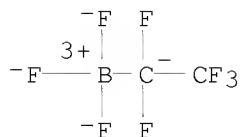
CM 1

CRN 390750-62-6

CMF C2 B F8

CCI CCS

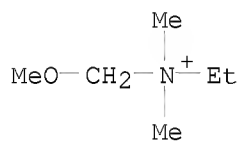




CM 2

CRN 97291-97-9

CMF C6 H16 N O



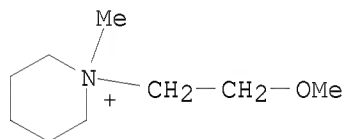
RN 858948-65-9 CAPLUS

CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-77-3

CMF C9 H20 N O

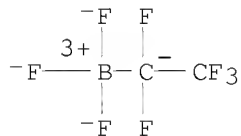


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 858948-66-0 CAPLUS

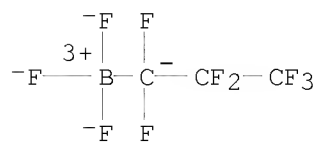
CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

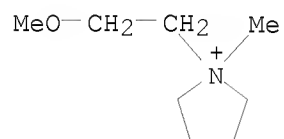
CCI CCS



CM 2

CRN 464927-75-1

CMF C8 H18 N O



RN 858948-67-1 CAPLUS

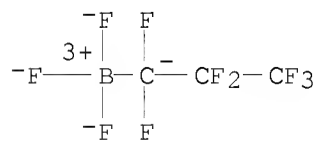
CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

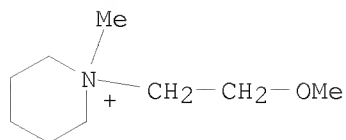
CCI CCS



CM 2

CRN 464927-77-3

CMF C9 H20 N O



RN 858948-68-2 CAPLUS

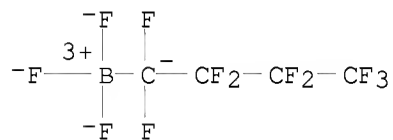
CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

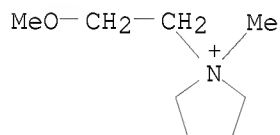
CCI CCS



CM 2

CRN 464927-75-1

CMF C8 H18 N O



RN 858948-69-3 CAPLUS

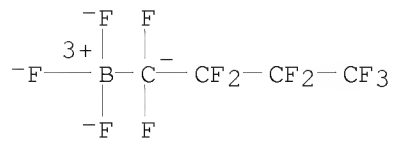
CN Piperidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

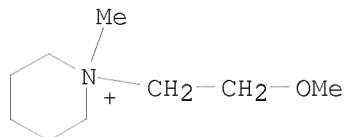
CCI CCS



CM 2

CRN 464927-77-3

CMF C9 H20 N O



RN 858948-70-6 CAPLUS

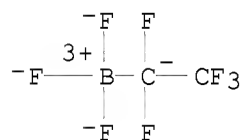
CN Pyrrolidinium, 1,1-dimethyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

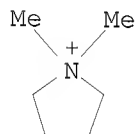
CCI CCS



CM 2

CRN 15312-12-6

CMF C6 H14 N



RN 858948-71-7 CAPLUS

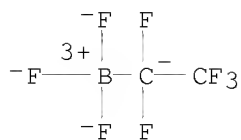
CN Pyrrolidinium, 1-ethyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(  
1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

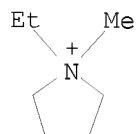
CCI CCS



CM 2

CRN 15302-90-6

CMF C7 H16 N



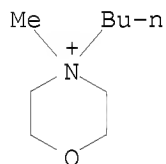
RN 858948-72-8 CAPLUS

CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 82372-00-7

CMF C9 H20 N O

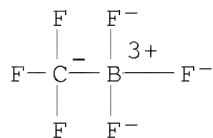


CM 2

CRN 44629-17-6

CMF C B F6

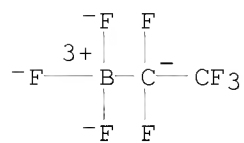
CCI CCS



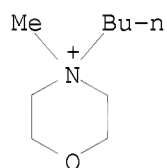
RN 858948-74-0 CAPLUS

CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1  
 CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS

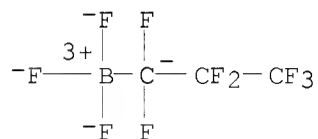


CM 2  
 CRN 82372-00-7  
 CMF C9 H20 N O

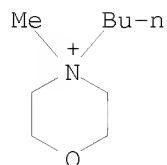


RN 858948-75-1 CAPLUS  
 CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1  
 CRN 658698-74-9  
 CMF C3 B F10  
 CCI CCS



CM 2  
 CRN 82372-00-7  
 CMF C9 H20 N O



RN 858948-76-2 CAPLUS

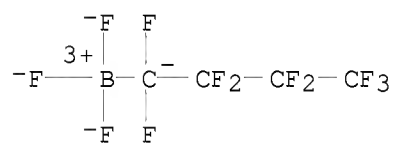
CN Morpholinium, 4-butyl-4-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

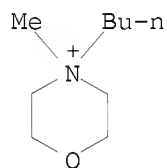
CCI CCS



CM 2

CRN 82372-00-7

CMF C9 H20 N O



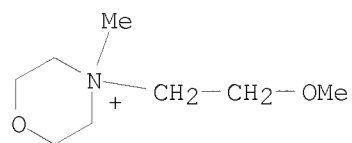
RN 858948-77-3 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

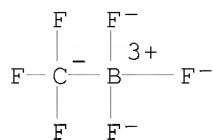


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



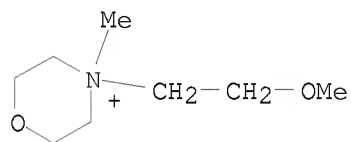
RN 858948-78-4 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

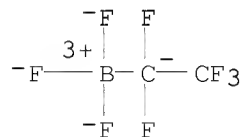


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 858948-79-5 CAPLUS

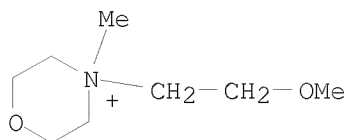
CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2



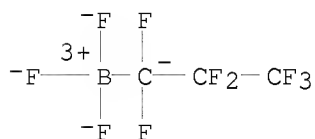


CM 2

CRN 658698-74-9

CMF C3 B F10

CCI CCS



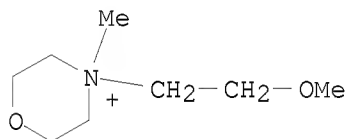
RN 858948-80-8 CAPLUS

CN Morpholinium, 4-(2-methoxyethyl)-4-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 796039-06-0

CMF C8 H18 N O2

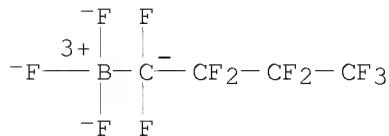


CM 2

CRN 658698-75-0

CMF C4 B F12

CCI CCS



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2005:519515 CAPLUS <<LOGINID::20080215>>  
 DN 143:62380  
 TI Semi-solid lubricant composition  
 IN Haneyama, Makoto; Moriuchi, Tsutomu  
 PA Kyodo Yushi Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005154755	A	20050616	JP 2004-319403	20041102
PRAI	JP 2003-376010	A	20031105		

AB The title composition comprises a lubricating base oil containing  $\geq 0.5$  weight% of ionic liquid, 1-30 of a thickener such as metal soap or urea compds., and 1-50 weight% of a solid lubricant such as MoS<sub>2</sub>, BN or PTFE. The anion of ionic liquid is hexafluorophosphate, NO<sub>3</sub>, tetrafluorophosphate or acetic acid. The cation of ionic liquid is imidazolium, pyridinium or pipyridium or quaternary ammonium salt. The composition is superior in lubricity, low vapor pressure, and electrostatic prevention for semiconductor device or spacecrafts.

IT 741677-68-9 741677-69-0  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (ionic liquid; semi-solid lubricant composition for semiconductor device or spacecraft)

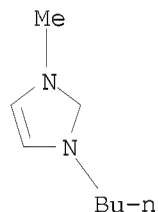
RN 741677-68-9 CAPLUS

CN 1H-Imidazolium, 1-butyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 80432-08-2

CMF C8 H15 N2



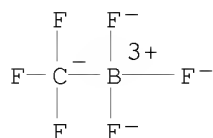
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

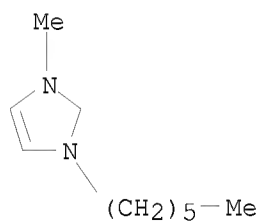
CRN 44629-17-6

CMF C B F6

CCI CCS

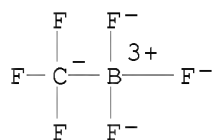


RN 741677-69-0 CAPLUS  
 CN 1H-Imidazolium, 1-hexyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 85100-82-9  
 CMF C10 H19 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2  
 CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



L53 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2005:240999 CAPLUS <<LOGINID::20080215>>  
 DN 144:69877  
 TI Structure of nitrile-functionalized alkyltrifluoroborate salts  
 AU Fei, Zhaofu; Zhao, Dongbin; Geldbach, Tilmann J.; Scopelliti, Rosario; Dyson, Paul J.  
 CS Ecole Polytechnique Federale de Lausanne, Institut des Sciences et Ingenierie Chimiques (EPFL), Lausanne, 1015, Switz.  
 SO European Journal of Inorganic Chemistry (2005), (5), 860-865  
 CODEN: EJICFO; ISSN: 1434-1948  
 PB Wiley-VCH Verlag GmbH & Co. KGaA  
 DT Journal  
 LA English  
 OS CASREACT 144:69877

AB Mol. structure of nitrile-functionalized alkyltrifluoroborate anion was determined by single-crystal x-ray crystallog. anal. of its PPN and potassium-crown ether salts. Cation exchange of racemic K[MeCH(BF<sub>3</sub>)CH<sub>2</sub>CN] (1) with PPN chloride [PPN = bis(triphenylphosphoranylidene)iminium] gave crystalline (PPN)[MeCH(BF<sub>3</sub>)CH<sub>2</sub>CN] (3), whereas complexation of 1 with 18-crown-6 gave [K(18-crown-6)][MeCH(BF<sub>3</sub>)CH<sub>2</sub>CN] (4). Crystal structures of both 3 and 4 are reported. In the complex 3 no direct cation-anion (F→N or F→P) interactions are observed although F...H-C hydrogen bonds are present. In the later complex all three fluorine atoms interact with the potassium cation and C-H...F hydrogen bonds are also present. The ESI-MS spectra in methanol solution of the potassium complex show similar anion-cation aggregation to that observed for ionic liqs., and comparisons between the two complexes and ionic liquid systems are made.

IT 871819-50-0P 871819-52-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (crystal structure; preparation and structure of nitrile-functionalized alkyltrifluoroborate bis(triphenylphosphoranylidene)iminium and potassium-18-crown-6 salts)

RN 871819-50-0 CAPLUS

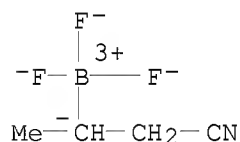
CN Phosphorus(1+), triphenyl(P,P,P-triphenylphosphine imidato-κN)-, (T-4)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

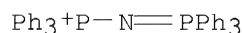
CCI CCS



CM 2

CRN 48236-06-2

CMF C36 H30 N P2



RN 871819-52-2 CAPLUS

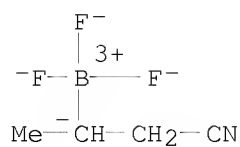
CN Potassium(1+), (1,4,7,10,13,16-hexaoxacyclooctadecane-κO1,κO4,κO7,κO10,κO13,κO16)-, (OC-6-11)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

CCI CCS

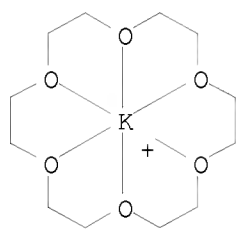


CM 2

CRN 31270-13-0

CMF C12 H24 K O6

CCI CCS



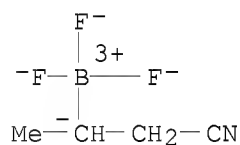
IT 813458-71-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation and structure of nitrile-functionalized alkyltrifluoroborate bis(triphenylphosphoranylidene)iminium and potassium-18-crown-6 salts)

RN 813458-71-8 CAPLUS

CN Borate(1-), (2-cyano-1-methylethyl)trifluoro-, potassium, (T-4)- (9CI)  
(CA INDEX NAME)



RE.CNT 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 16 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2005:182637 CAPLUS <<LOGINID::20080215>>  
DN 142:280207  
TI Preparation of ionic liquids based on imidazolium  
salts incorporating a nitrile functionality  
IN Dyson, Paul; Zhao, Dongbin; Fei, Zhaofu  
PA Ecole Polytechnique Federale De Lausanne Epfl, Switz.

SO PCT Int. Appl., 32 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005019185	A1	20050303	WO 2004-EP9499	20040825
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2004266847	A1	20050303	AU 2004-266847	20040825
	CA 2534864	A1	20050303	CA 2004-2534864	20040825
	EP 1660457	A1	20060531	EP 2004-764475	20040825
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
	CN 1839122	A	20060927	CN 2004-80023820	20040825
	BR 2004014005	A	20061024	BR 2004-14005	20040825
	JP 2007503415	T	20070222	JP 2006-524325	20040825
	IN 2006CN00649	A	20070831	IN 2006-CN649	20060222
	MX 2006PA02214	A	20060427	MX 2006-PA2214	20060224
PRAI	US 2003-497776P	P	20030826		
	WO 2004-EP9499	W	20040825		

OS CASREACT 142:280207; MARPAT 142:280207

AB Novel chemical compds. of the general formula K+A- [wherein K+ is a 5- or 6-membered heterocyclic ring having 1-3 hetero atoms, which can be independently N, S, or O; with the proviso that at least one of the hetero atoms must be a quaternized nitrogen atom having a -R'CN substituent, wherein R' is C1-12 alkyl; the heterocyclic ring having up to 4 or 5 substituents independently chosen from the moieties: (i) H; (ii) halogen or (iii) C1-12 alkyl, which is unsubstituted or partially or fully substituted by further groups, preferably F, Cl, N(CnF(2n+1-x)Hx)2, O(CnF(2n+1-x)Hx), SO2(CnF(2n+1-x)Hx)2 or CnF(2n+1-x)Hx where 1<n<6 and 0<x<13; and (iv) a Ph ring which is unsubstituted or partially or fully substituted by further groups, preferably F, Cl, N(CnF(2n+1-x)Hx)2, O(CnF(2n+1-x)Hx), SO2(CnF(2n+1-x)Hx)2 or CnF(2n+1-x)Hx where 1<n<6 and 0<x<13; A- is any anion that provides a salt with a low m.p., below about 100 °C; A- can be halide, BF4-, PF6-, NO3-, CH3CO2-, CF3SO3-, (CF3SO2)2N-, (CF3SO2)3C- CF3CO2- or N(CN)2- or [BF3RCN]-] are prepared These compds. can be used as industrial solvents, especially as ligands

for efficient catalyst recycling. Thus, a mixture of 1-methylimidazole (8.21 g, 0.10 mol) and Cl(CH2)3CN (12.43 g, 0.12 mol) was stirred at 80° for 24 h. The resulting solid was washed with di-Et ether (3 x 30 mL) and dried under vacuum for 24 h to give 1-(3-cyanopropyl)-3-methylimidazolium chloride (I) (17.6 g, 95% yield). I (5.57 g, 0.03 mol) and NaBF4 (3.62 g, 0.033 mol) in acetone was stirred at room temperature for 48 h to give, after filtration and removal of the solvent and washing pale yellow waxy solid with THF and Et2O, 1-(3-cyanopropyl)-3-methylimidazolium tetrafluoroborate (II) (6.4 g, 90% yield). Hydrogenation of 1,3-cyclohexadiene in the presence of PdCl2 in ionic liq . II under H pressure of 45 atm at 100° for 4 h gave 90% cyclohexene. The product was simply removed by decantation and no

palladium was detected in the product. Suzuki coupling of iodobenzene with benzeneboronic acid in the presence of bis[1-(3-cyanopropyl)-3-methylimidazolium]palladium tetrachloride and Na<sub>2</sub>CO<sub>3</sub> in II at 100° with vigorous stirring for 12 h gave 100% biphenyl. The yields can be maintained at .apprx.90% after 6 runs of catalysis.

IT 813458-71-8

RL: CAT (Catalyst use); USES (Uses)

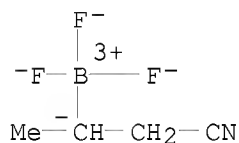
(hydrogenation catalyst; preparation of ionic liqs.

based on imidazolium salts incorporating nitrile functionality as

industrial solvents for efficient catalyst recycling)

RN 813458-71-8 CAPLUS

CN Borate(1-), (2-cyano-1-methylethyl)trifluoro-, potassium, (T-4)- (9CI)  
(CA INDEX NAME)



● K<sup>+</sup>

IT 813458-75-2P 813458-76-3P 813458-77-4P

813458-78-5P 813458-79-6P 813458-80-9P

813458-81-0P 813458-82-1P 813458-84-3P

RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP  
(Preparation); USES (Uses)

(preparation of ionic liqs. based on imidazolium salts

incorporating nitrile functionality as industrial solvents for

efficient catalyst recycling)

RN 813458-75-2 CAPLUS

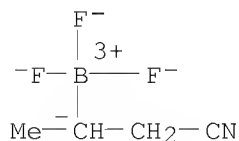
CN 1H-Imidazolium, 1-butyl-3-methyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

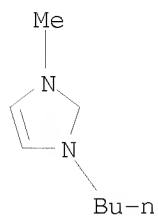
CCI CCS



CM 2

CRN 80432-08-2

CMF C8 H15 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-76-3 CAPLUS

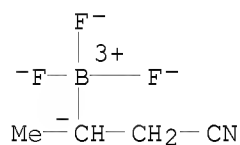
CN 1H-Imidazolium, 1-methyl-3-(2-propenyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

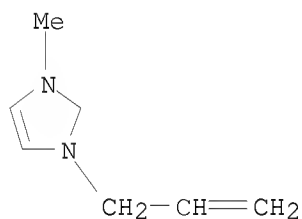
CCI CCS



CM 2

CRN 98806-09-8

CMF C7 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-77-4 CAPLUS

CN 1H-Imidazolium, 1-methyl-3-(2-propynyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

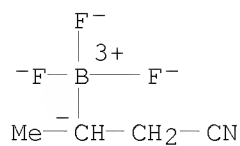
CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

CCI CCS

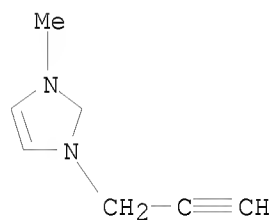




CM 2

CRN 98795-20-1

CMF C7 H9 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-78-5 CAPLUS

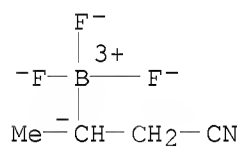
CN 1H-Imidazolium, 1-(3-carboxypropyl)-3-methyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

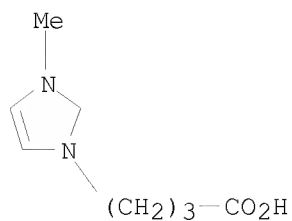
CCI CCS



CM 2

CRN 805228-44-8

CMF C8 H13 N2 O2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-79-6 CAPLUS

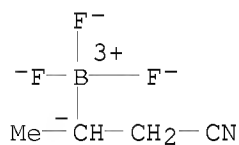
CN 1H-Imidazolium, 1-(3-cyanopropyl)-3-methyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

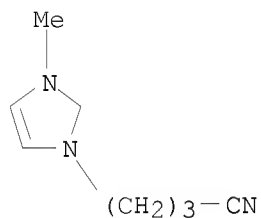
CCI CCS



CM 2

CRN 683224-97-7

CMF C8 H12 N3



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-80-9 CAPLUS

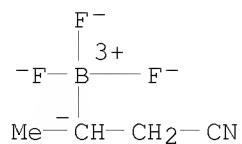
CN 1H-Imidazolium, 1,3-di-2-propenyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

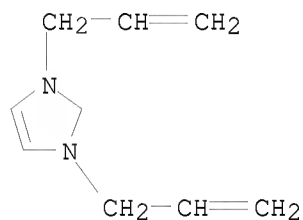
CCI CCS



CM 2

CRN 67711-50-6

CMF C9 H13 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-81-0 CAPLUS

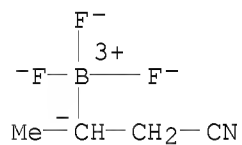
CN 1H-Imidazolium, 1,3-di-2-propynyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

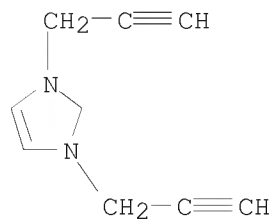
CCI CCS



CM 2

CRN 682743-95-9

CMF C9 H9 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-82-1 CAPLUS

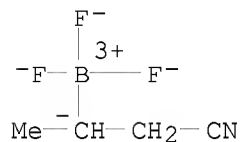
CN 1H-Imidazolium, 1,3-bis(3-carboxypropyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

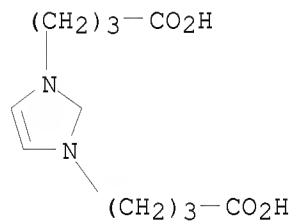
CCI CCS



CM 2

CRN 805228-50-6

CMF C11 H17 N2 O4



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

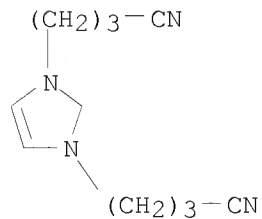
RN 813458-84-3 CAPLUS

CN 1H-Imidazolium, 1,3-bis(3-cyanopropyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-83-2

CMF C11 H15 N4



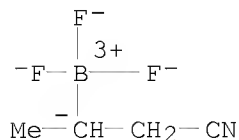
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 813458-74-1

CMF C4 H6 B F3 N

CCI CCS



RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2005:142248 CAPLUS <<LOGINID::20080215>>

DN 143:266623

TI Ionic liquids as reaction media for  
palladium-catalyzed cross-coupling of aryldiazonium tetrafluoroborates  
with potassium organotrifluoroborates

AU Gallo, Vito; Mastroianni, Piero; Nobile, Cosimo F.; Paolillo, Rossella;  
Taccardi, Nicola

CS Dipartimento di Ingegneria delle Acque e di Chimica del Politecnico di  
Bari, Bari, 70125, Italy

SO European Journal of Inorganic Chemistry (2005), (3), 582-588  
CODEN: EJICFO; ISSN: 1434-1948

PB Wiley-VCH Verlag GmbH & Co. KGaA

DT Journal

LA English

OS CASREACT 143:266623

AB The system comprising a palladium complex in a 1-butyl-3-methylimidazolium  
tetrafluoroborate/methanol mixture efficiently catalyzes the cross-coupling  
reaction between p-tolyldiazonium tetrafluoroborate and potassium  
phenyltrifluoroborate at room temperature. The presence of methanol (or water)  
in the reaction mixture is necessary in order to achieve quant. conversions,  
due to its scavenging behavior towards the BF3 formed during the reaction.  
Yields higher than 90% were obtained using Pd2(dba)3 or the  
azapalladacycle as the palladium source. With the latter complex a  
turnover frequency of about 6000 h<sup>-1</sup> was attained in the coupling of  
aryldiazonium tetrafluoroborates with potassium vinyltrifluoroborate.  
Recycling of the catalytic solution could be performed provided that a slight  
excess of diazonium salt was used in the first run.

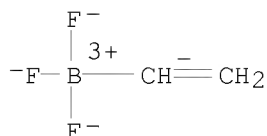
IT 13682-77-4, Potassium trifluorovinylborate

RL: RCT (Reactant); RACT (Reactant or reagent)

(ionic liqs. as reaction media for  
palladium-catalyzed cross-coupling of aryldiazonium tetrafluoroborates  
with potassium organotrifluoroborates in presence of methanol or water)

RN 13682-77-4 CAPLUS

CN Borate(1-), ethenyltrifluoro-, potassium (1:1), (T-4)- (CA INDEX NAME)



● K<sup>+</sup>

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 18 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2005:79078 CAPLUS <<LOGINID::20080215>>  
DN 142:279844  
TI Low-melting, low-viscous, hydrophobic ionic liquids:  
Aliphatic quaternary ammonium salts with perfluoroalkyltrifluoroborates  
AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki  
CS Research Institute for Ubiquitous Energy Devices, National Institute of  
Advanced Industrial Science and Technology, Osaka, 563-8577, Japan  
SO Chemistry--A European Journal (2005), 11(2), 752-766  
CODEN: CEUJED; ISSN: 0947-6539  
PB Wiley-VCH Verlag GmbH & Co. KGaA  
DT Journal  
LA English  
OS CASREACT 142:279844  
AB A novel class of low-melting, hydrophobic ionic liqs.  
based on relatively small aliphatic quaternary ammonium cations  
([R1R2R3NR4]<sup>+</sup>, wherein R1, R2, R3 = Me, Et; R4 = n-Pr, n-Bu, MeOCH2CH2)  
and perfluoroalkyltrifluoroborate anions ([R5BF3]<sup>-</sup>, R5 = F3C, C2F5,  
n-C3F7, n-C4F9) have been prepared and characterized. The important  
physicochem. and electrochem. properties of these salts, including m.p.,  
glass transition, viscosity, d., ionic conductivity, thermal and electrochem.  
stability, have been determined and comparatively studied with those based on  
the corresponding [BF4]<sup>-</sup> and [(CF3SO2)2N]<sup>-</sup> salts. The influence of the  
structure variation in the quaternary ammonium cation and  
perfluoroalkyltrifluoroborate ([R5BF3]<sup>-</sup>) anion on the above physicochem.  
properties is discussed. Most of these salts are liqs. at 25°C and  
exhibit low viscosities (58-210 cP at 25°C) and moderate  
conductivities (1.1-3.8 mScm<sup>-1</sup>). The electrochem. windows of these salts  
are much larger than those of the corresponding 1,3-dialkylimidazolium  
salts. Addnl., a number of [R5BF3]<sup>-</sup> salts exhibit plastic crystal behavior.

IT 749879-29-6P 749879-30-9P 749879-31-0P  
749879-32-1P 847452-28-2P 847452-29-3P  
847452-30-6P 847452-31-7P 847452-32-8P  
847452-33-9P 847452-34-0P 847452-35-1P  
847452-36-2P 847452-37-3P 847452-38-4P  
847452-39-5P 847452-40-8P 847452-41-9P  
847452-43-1P 847452-44-2P 847452-45-3P  
847452-46-4P 847452-47-5P 847452-48-6P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation, viscosity and thermal and electrochem. properties of aliphatic  
quaternary ammonium perfluoroalkyltrifluoroborates as low-melting  
hydrophobic ionic liqs.)

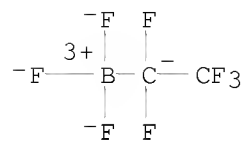
RN 749879-29-6 CAPLUS  
CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

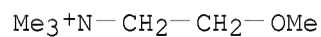
CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



RN 749879-30-9 CAPLUS

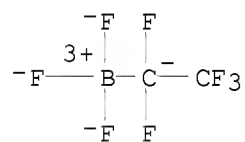
CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

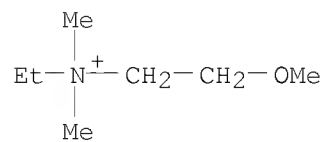
CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O

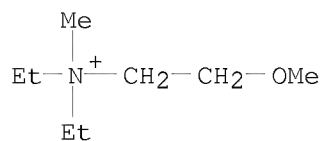


RN 749879-31-0 CAPLUS

CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

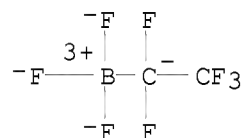
CM 1

CRN 464927-71-7  
CMF C8 H20 N O



CM 2

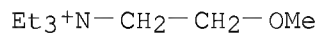
CRN 390750-62-6  
CMF C2 B F8  
CCI CCS



RN 749879-32-1 CAPLUS  
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

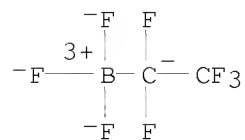
CM 1

CRN 464927-73-9  
CMF C9 H22 N O



CM 2

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS

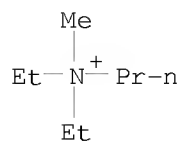




RN 847452-28-2 CAPLUS  
 CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
 trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

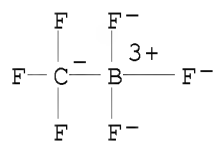
CM 1

CRN 80587-93-5  
 CMF C8 H20 N



CM 2

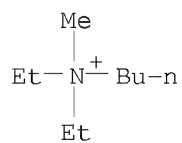
CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



RN 847452-29-3 CAPLUS  
 CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(trifluoromethyl)bor  
 ate(1-) (9CI) (CA INDEX NAME)

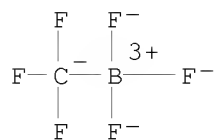
CM 1

CRN 51002-64-3  
 CMF C9 H22 N



CM 2

CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



RN 847452-30-6 CAPLUS

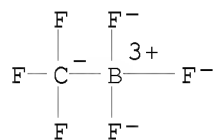
CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 44629-17-6

CMF C B F6

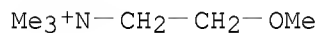
CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



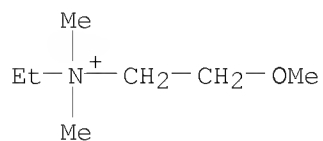
RN 847452-31-7 CAPLUS

CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 101853-27-4

CMF C7 H18 N O

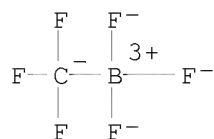


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



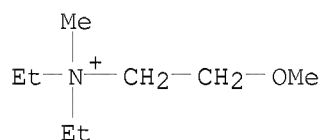
RN 847452-32-8 CAPLUS

CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-71-7

CMF C8 H20 N O

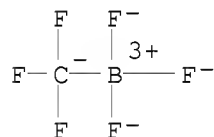


CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



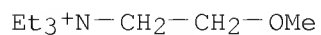
RN 847452-33-9 CAPLUS

CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

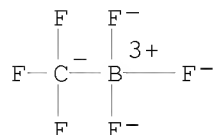
CRN 464927-73-9

CMF C9 H22 N O



CM 2

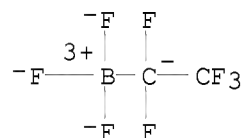
CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



RN 847452-34-0 CAPLUS  
 CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
 trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

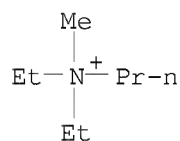
CM 1

CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS



CM 2

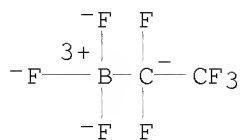
CRN 80587-93-5  
 CMF C8 H20 N



RN 847452-35-1 CAPLUS  
 CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(pentafluoroethyl)bo  
 rate(1-) (9CI) (CA INDEX NAME)

CM 1

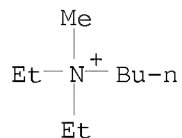
CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS



CM 2

CRN 51002-64-3

CMF C9 H22 N



RN 847452-36-2 CAPLUS

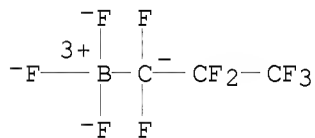
CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

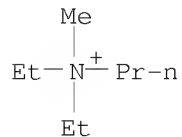
CCI CCS



CM 2

CRN 80587-93-5

CMF C8 H20 N



RN 847452-37-3 CAPLUS

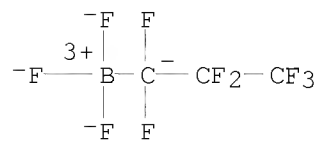
CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

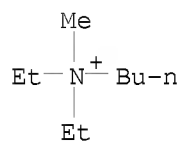
CCI CCS



CM 2

CRN 51002-64-3

CMF C9 H22 N



RN 847452-38-4 CAPLUS

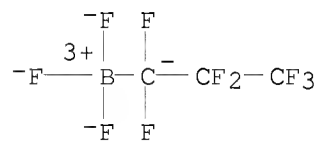
CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

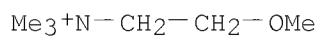
CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



RN 847452-39-5 CAPLUS

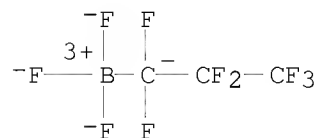
CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

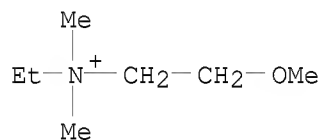
CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



RN 847452-40-8 CAPLUS

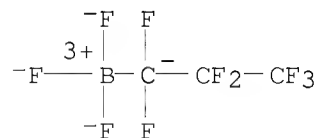
CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

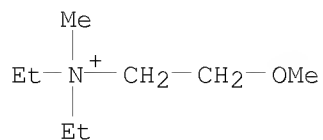
CCI CCS



CM 2

CRN 464927-71-7

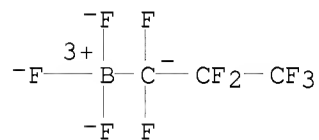
CMF C8 H20 N O



RN 847452-41-9 CAPLUS  
 CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
 trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

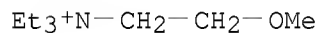
CM 1

CRN 658698-74-9  
 CMF C3 B F10  
 CCI CCS



CM 2

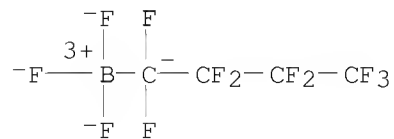
CRN 464927-73-9  
 CMF C9 H22 N O



RN 847452-43-1 CAPLUS  
 CN 1-Propanaminium, N,N-diethyl-N-methyl-, (T-4)-  
 trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0  
 CMF C4 B F12  
 CCI CCS

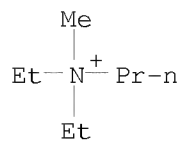


CM 2

CRN 80587-93-5



CMF C8 H20 N



RN 847452-44-2 CAPLUS

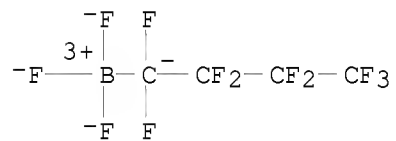
CN 1-Butanaminium, N,N-diethyl-N-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

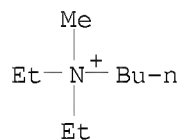
CCI CCS



CM 2

CRN 51002-64-3

CMF C9 H22 N



RN 847452-45-3 CAPLUS

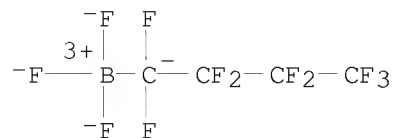
CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

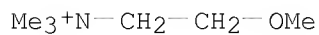
CCI CCS



CM 2

CRN 25728-47-6

CMF C6 H16 N O



RN 847452-46-4 CAPLUS

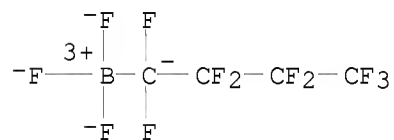
CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

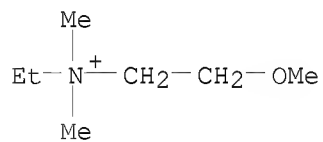
CCI CCS



CM 2

CRN 101853-27-4

CMF C7 H18 N O



RN 847452-47-5 CAPLUS

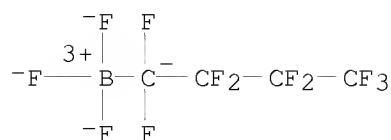
CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

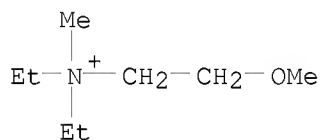
CCI CCS



CM 2

CRN 464927-71-7

CMF C8 H20 N O



RN 847452-48-6 CAPLUS

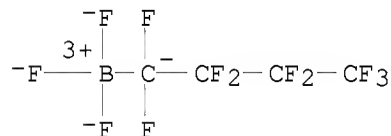
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

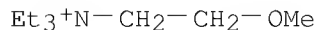
CCI CCS



CM 2

CRN 464927-73-9

CMF C9 H22 N O



RE.CNT 83 THERE ARE 83 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

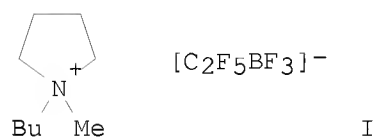
L53 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:1121653 CAPLUS <<LOGINID::20080215>>

DN 142:176638

TI Low-melting, low-viscous, hydrophobic ionic liquids:  
N-alkyl(alkyl ether)-N-methylpyrrolidinium perfluoroethyltrifluoroborate

AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki  
 CS Research Institute for Ubiquitous Energy Devices, National Institute of  
 Advanced Industrial Science and Technology, Osaka, 563-8577, Japan  
 SO Chemistry Letters (2004), 33(12), 1636-1637  
 CODEN: CMLTAG; ISSN: 0366-7022  
 PB Chemical Society of Japan  
 DT Journal  
 LA English  
 OS CASREACT 142:176638  
 GI



AB A series of hydrophobic ionic liqs., e.g., I, comprising N-alkyl-N-methylpyrrolidinium and perfluoroethyltrifluoroborate were prepared and characterized. The [C2F5BF3]--based salts showed lower m.ps. than the corresponding [BF4]--based ones. Of these salts, some were liqs. at room temperature and show very low viscosities (37-71 cP at 25 °C), high ionic conductivities (3.0-6.8 mScm-1) and wide electrochem. windows.

IT 834861-85-7P 834861-87-9P 834861-88-0P  
 834861-89-1P 834861-91-5P 834861-92-6P  
 834861-93-7P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation and physicochem. properties of pyrrolidinium perfluoroethyltrifluoroborates via anion exchange of pyrrolidinium bromide followed by salt formation with perfluoroethyltrifluoro(hydro)b oron)

RN 834861-85-7 CAPLUS

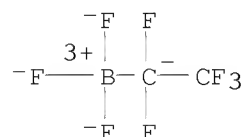
CN Pyrrolidinium, 1-methyl-1-propyl-, (T-4)-trifluoro(pentafluoroethyl)borate (1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

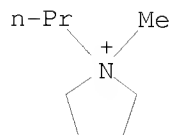
CCI CCS



CM 2

CRN 108259-90-1

CMF C8 H18 N



RN 834861-87-9 CAPLUS

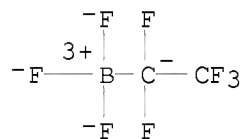
CN Pyrrolidinium, 1-methyl-1-pentyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

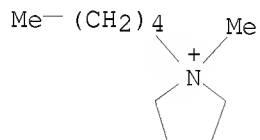
CCI CCS



CM 2

CRN 58875-50-6

CMF C10 H22 N



RN 834861-88-0 CAPLUS

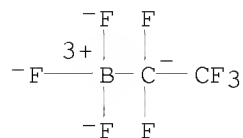
CN Pyrrolidinium, 1-hexyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(  
1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

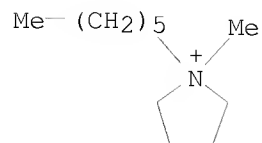
CCI CCS



CM 2

CRN 330671-30-2

CMF C11 H24 N



RN 834861-89-1 CAPLUS

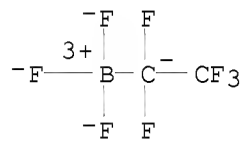
CN Pyrrolidinium, 1-heptyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

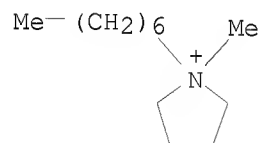
CCI CCS



CM 2

CRN 330671-32-4

CMF C12 H26 N



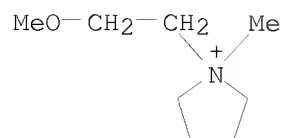
RN 834861-91-5 CAPLUS

CN Pyrrolidinium, 1-(2-methoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-75-1

CMF C8 H18 N O

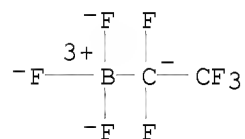


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RN 834861-92-6 CAPLUS

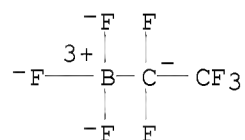
CN Pyrrolidinium, 1-(2-ethoxyethyl)-1-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

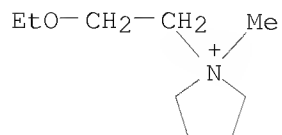
CCI CCS



CM 2

CRN 23671-55-8

CMF C9 H20 N O



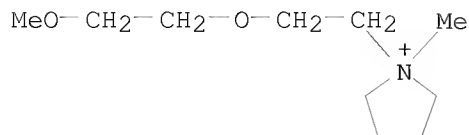
RN 834861-93-7 CAPLUS

CN Pyrrolidinium, 1-[2-(2-methoxyethoxy)ethyl]-1-methyl-,  
(T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 743436-79-5

CMF C10 H22 N O2

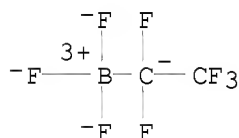


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



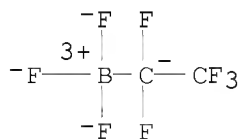
IT 685090-44-2

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation and physicochem. properties of pyrrolidinium  
perfluoroethyltrifluoroborates via anion exchange of pyrrolidinium  
bromide followed by salt formation with perfluoroethyltrifluoro(hydro)b  
oron)

RN 685090-44-2 CAPLUS

CN Borate(1-), trifluoro(pentafluoroethyl)-, hydrogen, (T-4)- (9CI) (CA  
INDEX NAME)



● H<sup>+</sup>

IT 834861-86-8P 834861-90-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation, physicochem. properties, and electrochem. stability of  
pyrrolidinium perfluoroethyltrifluoroborates via anion exchange of  
pyrrolidinium bromide followed by salt formation with  
perfluoroethyltrifluoro(hydro)boron)

RN 834861-86-8 CAPLUS



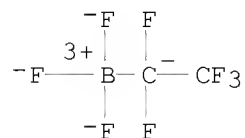
CN Pyrrolidinium, 1-butyl-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

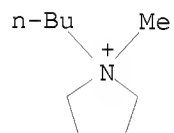
CCI CCS



CM 2

CRN 223437-10-3

CMF C9 H20 N



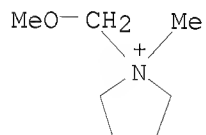
RN 834861-90-4 CAPLUS

CN Pyrrolidinium, 1-(methoxymethyl)-1-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 615564-10-8

CMF C7 H16 N O

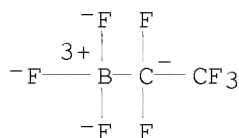


CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



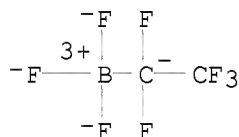
IT 476639-90-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation, physicochem. properties, and electrochem. stability of pyrrolidinium perfluoroethyltrifluoroborates via anion exchange of pyrrolidinium bromide followed by salt formation with perfluoroethyltrifluoro(hydro)boron)

RN 476639-90-4 CAPLUS

CN Borate(1-), trifluoro(pentafluoroethyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



● K<sup>+</sup>

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 20 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:1120394 CAPLUS <<LOGINID::20080215>>

DN 142:198127

TI Low-melting, low-viscous, hydrophobic ionic liquids:

1-alkyl(alkyl ether)-3-methylimidazolium perfluoroalkyltrifluoroborate

AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki

CS Research Institute for Ubiquitous Energy Devices, National Institute of Advanced Industrial Science and Technology (AIST), Osaka, 563-8577, Japan

SO Chemistry--A European Journal (2004), 10(24), 6581-6591

CODEN: CEUJED; ISSN: 0947-6539

PB Wiley-VCH Verlag GmbH & Co. KGaA

DT Journal

LA English

OS CASREACT 142:198127

AB Twenty two hydrophobic ionic liqs., 1-alkyl(alkyl ether)-3-methylimidazolium ([Cmmim]<sup>+</sup> or [CmOnmim]<sup>+</sup>; where Cm is 1-alkyl, Cm = nCmH2m+1, m = 1-4 and 6; CmOn is 1-alkyl ether, C201 = CH3OCH2, C301 = CH3OCH2CH2, and C502 = CH3(OCH2CH2)2) perfluoroalkyltrifluoroborate ([RFBF3]<sup>-</sup>, RF = CF3, C2F5, nC3F7, nC4F9), were prepared and characterized. Some of the important physicochem. properties of these salts including m.p., glass transition, viscosity, d., ionic conductivity, thermal and electrochem. stability, were determined and were compared with those of the reported [BF4]<sup>-</sup>-based ones. The influence of the structure variation in the imidazolium cation and the perfluoroalkyltrifluoroborate ([RFBF3]<sup>-</sup>) anion on the above physicochem. properties is discussed. The key features of these new salts are their low m.ps. (-42 to 35°) or extremely low glass transition (between -87 and -117°) without melting, and

considerably low viscosities (26-77 cP at 25°).

IT 681856-28-0P, 1-Ethyl-3-methylimidazolium  
trifluoromethyltrifluoroborate 685090-47-5P,  
1-Ethyl-3-methylimidazolium pentafluoroethyltrifluoroborate  
685090-48-6P, 1-Ethyl-3-methylimidazolium  
(heptafluoropropyl)trifluoroborate 685090-49-7P,  
1-Ethyl-3-methylimidazolium (nonafluorobutyl)trifluoroborate  
741677-66-7P, 1,3-Dimethylimidazolium  
trifluoromethyltrifluoroborate 741677-67-8P,  
1-Methyl-3-propylimidazolium trifluoromethyltrifluoroborate  
838839-72-8P, 1-Butyl-3-ethyl-imidazolium  
trifluoromethyltrifluoroborate 838839-73-9P,  
1-Ethyl-3-hexylimidazolium trifluoromethyltrifluoroborate  
838839-74-0P, 1-Methoxymethyl-3-methylimidazolium  
trifluoromethyltrifluoroborate 838839-75-1P,  
1-(2-Methoxyethyl)-3-methylimidazolium trifluoromethyltrifluoroborate  
838839-76-2P, 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium  
trifluoromethyltrifluoroborate 838839-77-3P,  
1,3-Dimethylimidazolium pentafluoroethyltrifluoroborate  
838839-78-4P, 1-Methyl-3-propylimidazolium  
pentafluoroethyltrifluoroborate 838839-79-5P,  
1-Butyl-3-ethylimidazolium pentafluoroethyltrifluoroborate  
838839-80-8P, 1-Ethyl-3-hexylimidazolium  
pentafluoroethyltrifluoroborate 838839-81-9P,  
1-Methoxymethyl-3-methylimidazolium pentafluoroethyltrifluoroborate  
838839-82-0P, 1-(2-Methoxyethyl)-3-methylimidazolium  
pentafluoroethyltrifluoroborate 838839-83-1P,  
1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium  
pentafluoroethyltrifluoroborate 838839-84-2P,  
1,3-Dimethylimidazolium (heptafluoropropyl)trifluoroborate  
838839-85-3P, 1-Methyl-3-propylimidazolium  
(heptafluoropropyl)trifluoroborate 838839-86-4P,  
1,3-Dimethylimidazolium (nonafluorobutyl)trifluoroborate  
838839-87-5P, 1-Methyl-3-propylimidazolium  
(nonafluorobutyl)trifluoroborate  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation and properties of low-melting, low-viscous, hydrophobic  
1-alkyl(methoxyalkyl)-3-methylimidazolium perfluoroalkyltrifluoroborate  
ionic liqs.)

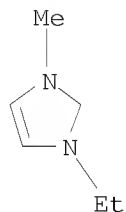
RN 681856-28-0 CAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(  
1-) (9CI) (CA INDEX NAME)

CM 1

CRN 65039-03-4

CMF C6 H11 N2



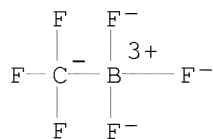
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



RN 685090-47-5 CAPLUS

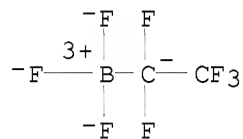
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

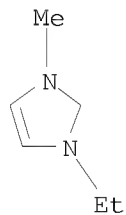
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

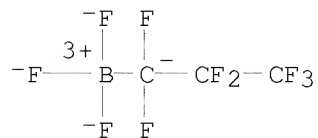
RN 685090-48-6 CAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

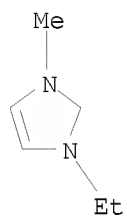
CRN 658698-74-9

CMF C3 B F10  
CCI CCS



CM 2

CRN 65039-03-4  
CMF C6 H11 N2



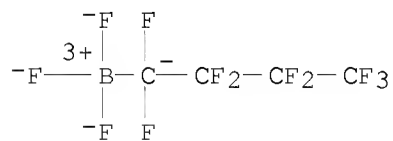
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 685090-49-7 CAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

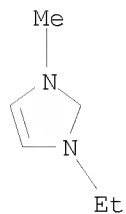
CM 1

CRN 658698-75-0  
CMF C4 B F12  
CCI CCS



CM 2

CRN 65039-03-4  
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

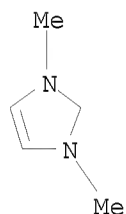
RN 741677-66-7 CAPLUS

CN 1H-Imidazolium, 1,3-dimethyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 45470-32-4

CMF C5 H9 N2



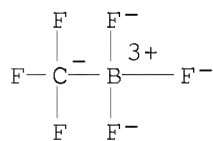
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



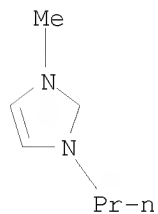
RN 741677-67-8 CAPLUS

CN 1H-Imidazolium, 1-methyl-3-propyl-, (T-4)-trifluoro(trifluoromethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 80432-06-0

CMF C7 H13 N2



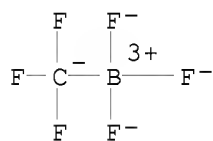
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



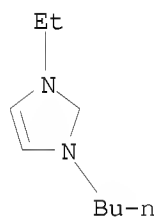
RN 838839-72-8 CAPLUS

CN 1H-Imidazolium, 1-butyl-3-ethyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 145022-47-5

CMF C9 H17 N2



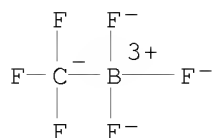
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CM 2

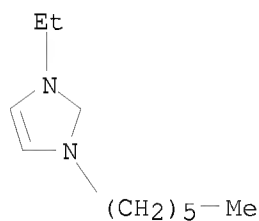
CRN 44629-17-6

CMF C B F6

CCI CCS

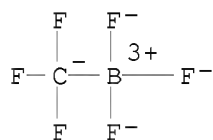


RN 838839-73-9 CAPLUS  
 CN 1H-Imidazolium, 1-ethyl-3-hexyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-)  
 ) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 120406-22-6  
 CMF C11 H21 N2



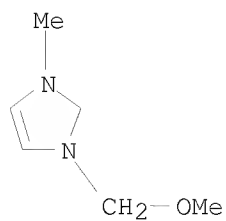
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2  
 CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



RN 838839-74-0 CAPLUS  
 CN 1H-Imidazolium, 1-(methoxymethyl)-3-methyl-, (T-4)-  
 trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 747347-52-0  
 CMF C6 H11 N2 O





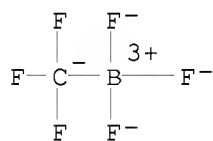
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



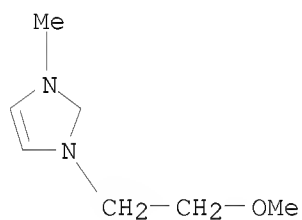
RN 838839-75-1 CAPLUS

CN 1H-Imidazolium, 1-(2-methoxyethyl)-3-methyl-, (T-4)-  
trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 174899-67-3

CMF C7 H13 N2 O



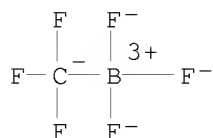
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

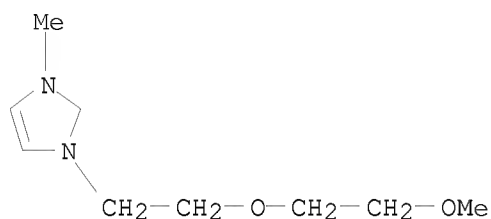
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CMF C B F6

CCI CCS

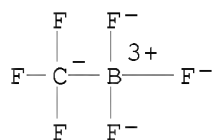


RN 838839-76-2 CAPLUS  
 CN 1H-Imidazolium, 1-[2-(2-methoxyethoxy)ethyl]-3-methyl-,  
 (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 474972-50-4  
 CMF C9 H17 N2 O2

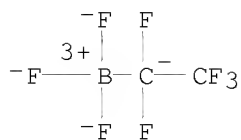


ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2  
 CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



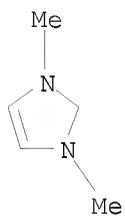
RN 838839-77-3 CAPLUS  
 CN 1H-Imidazolium, 1,3-dimethyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-)  
 (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS



CM 2

CRN 45470-32-4

CMF C5 H9 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-78-4 CAPLUS

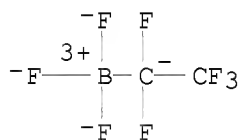
CN 1H-Imidazolium, 1-methyl-3-propyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

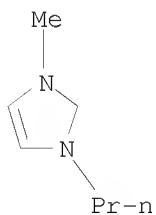
CCI CCS



CM 2

CRN 80432-06-0

CMF C7 H13 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-79-5 CAPLUS

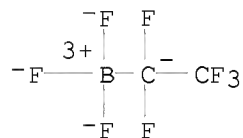
CN 1H-Imidazolium, 1-butyl-3-ethyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

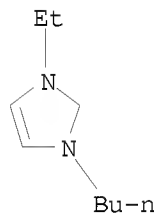
CCI CCS



CM 2

CRN 145022-47-5

CMF C9 H17 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-80-8 CAPLUS

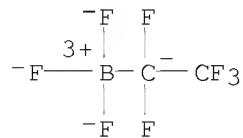
CN 1H-Imidazolium, 1-ethyl-3-hexyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

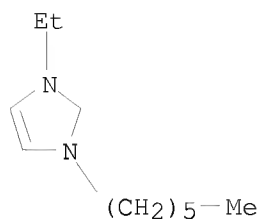
CMF C2 B F8

CCI CCS



CM 2

CRN 120406-22-6  
CMF C11 H21 N2



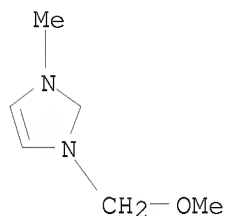
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-81-9 CAPLUS

CN 1H-Imidazolium, 1-(methoxymethyl)-3-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

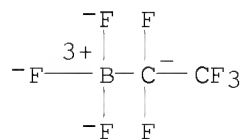
CRN 747347-52-0  
CMF C6 H11 N2 O



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS

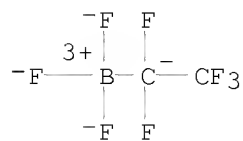


RN 838839-82-0 CAPLUS

CN 1H-Imidazolium, 1-(2-methoxyethyl)-3-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

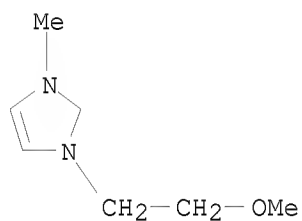
CM 1

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS



CM 2

CRN 174899-67-3  
CMF C7 H13 N2 O



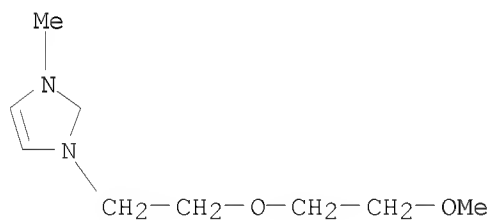
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-83-1 CAPLUS

CN 1H-Imidazolium, 1-[2-(2-methoxyethoxy)ethyl]-3-methyl-,  
(T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

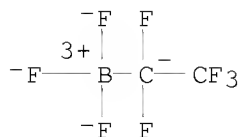
CRN 474972-50-4  
CMF C9 H17 N2 O2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS



RN 838839-84-2 CAPLUS

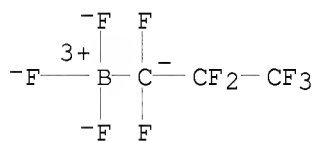
CN 1H-Imidazolium, 1,3-dimethyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

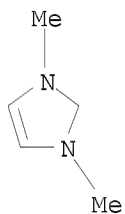
CCI CCS



CM 2

CRN 45470-32-4

CMF C5 H9 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-85-3 CAPLUS

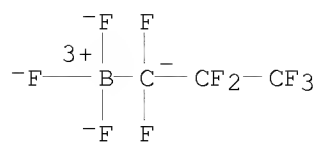
CN 1H-Imidazolium, 1-methyl-3-propyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

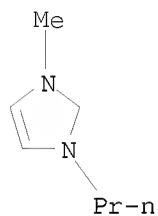
CCI CCS



CM 2

CRN 80432-06-0

CMF C7 H13 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-86-4 CAPLUS

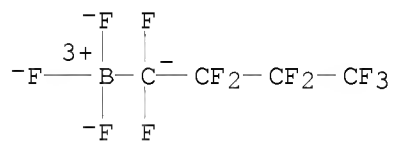
CN 1H-Imidazolium, 1,3-dimethyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-)  
(9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

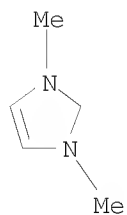
CCI CCS



CM 2

CRN 45470-32-4

CMF C5 H9 N2





ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 838839-87-5 CAPLUS

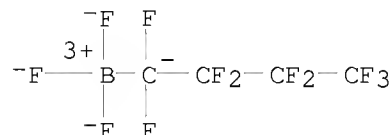
CN 1H-Imidazolium, 1-methyl-3-propyl-, (T-4)-trifluoro(nonafluorobutyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

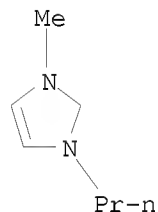
CCI CCS



CM 2

CRN 80432-06-0

CMF C7 H13 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

IT 42298-15-7, Potassium trifluoro(trifluoromethyl)borate

329065-90-9, Potassium trifluoro(heptafluoropropyl)borate

476639-90-4, Potassium trifluoro(pentafluoroethyl)borate

476639-91-5, Potassium trifluoro(nonafluorobutyl)borate

RL: RCT (Reactant); RACT (Reactant or reagent)

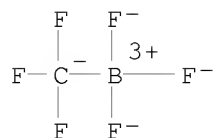
(preparation and properties of low-melting, low-viscous, hydrophobic

1-alkyl(methoxyalkyl)-3-methylimidazolium perfluoroalkyltrifluoroborate

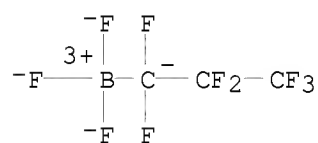
ionic liqs.)

RN 42298-15-7 CAPLUS

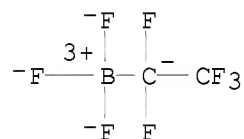
CN Borate(1-), trifluoro(trifluoromethyl)-, potassium, (T-4)- (9CI) (CA  
INDEX NAME)



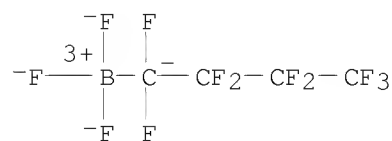
RN 329065-90-9 CAPLUS  
 CN Borate(1-), trifluoro(heptafluoropropyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



RN 476639-90-4 CAPLUS  
 CN Borate(1-), trifluoro(pentafluoroethyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



RN 476639-91-5 CAPLUS  
 CN Borate(1-), trifluoro(nonafluorobutyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)

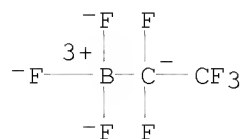


RE.CNT 74 THERE ARE 74 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 21 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2004:1059309 CAPLUS <<LOGINID::20080215>>  
DN 142:37908  
TI Synthesis of guanidinium-cation containing salts for use as ionic  
liquid reaction media  
IN Welz-Biermann, Urs; Ignatyev, Nikolai; Willner, Helge; Bissky, German  
PA Merck Patent G.m.b.H., Germany  
SO PCT Int. Appl., 42 pp.  
CODEN: PIXXD2  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2004106288	A2	20041209	WO 2004-EP3459	20040401
	WO 2004106288	A3	20050317		
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	RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	DE 10325051	A1	20041223	DE 2003-10325051	20030602
	EP 1636173	A2	20060322	EP 2004-724995	20040401
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK			
	US 2007265453	A1	20071115	US 2007-559183	20070402
PRAI	DE 2003-10325051	A	20030602		
	WO 2004-EP3459	W	20040401		
OS	MARPAT 142:37908				
AB	The invention relates to salts containing guanidinium cations, to a method for their production and to their use as ionic liqs. Thus, 1,3-dimethyl-2-chloroimidazolidinium chloride was reacted with trimethylsilyldiethylamine to give 1,3-dimethyl-2-diethylaminioimidazolidinium chloride, which was then reacted with trifluorotris(pentafluoroethyl)phosphate to give the desired compound (I), m.p. 36-37° C. I had viscosities of 78, 34, and 18 cP at 40, 60, and 80 °C, resp., compared to 346, 269, and 124 cP for reference compound N,N-dimethyl-N',N',N'',N''-tetrahexylguanidinium bis(trifluoromethanesulfonyl)imide at 25, 40, or 60 °C, resp.				
IT	805247-60-3P				
	RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation) (preparation of ionic liqs. containing guanidinium cations)				
RN	805247-60-3 CAPLUS				
CN	Methanaminium, N-[bis(dimethylamino)methylene]-N-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)				
CM	1				
CRN	390750-62-6				
CMF	C2 B F8				

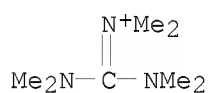
CCI CCS



CM 2

CRN 44872-05-1

CMF C7 H18 N3



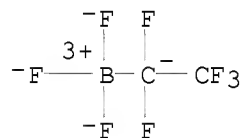
IT 476639-90-4, Potassium pentafluoroethyltrifluoroborate

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of ionic liqs. containing guanidinium cations)

RN 476639-90-4 CAPLUS

CN Borate(1-), trifluoro(pentafluoroethyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



● K<sup>+</sup>

L53 ANSWER 22 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN

AN 2004:912876 CAPLUS <<LOGINID::20080215>>

DN 142:74507

TI Dual-functionalized ionic liquids: synthesis and  
characterization of imidazolium salts with a nitrile-functionalized anion  
AU Zhao, Dongbin; Fei, Zhaofu; Ohlin, C. Andre; Laurenczy, Gabor; Dyson, Paul  
J.

CS Institut des Sciences et Ingenierie Chimiques, Ecole Polytechnique  
Federale de Lausanne, EPFL-BCH-LCOM, Lausanne, CH-1015, Switz.

SO Chemical Communications (Cambridge, United Kingdom) (2004), (21),  
2500-2501

CODEN: CHCOFS; ISSN: 1359-7345

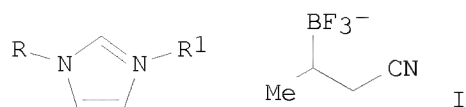
PB Royal Society of Chemistry

DT Journal

LA English

OS CASREACT 142:74507

GI



AB Ionic liqs. I [R = Bu, CH<sub>2</sub>CH:CH<sub>2</sub>, CH<sub>2</sub>C.tplbond.CH, (CH<sub>2</sub>)<sub>3</sub>CO<sub>2</sub>H, (CH<sub>2</sub>)<sub>3</sub>CN, R<sub>1</sub> = Me, R] were prepared from the halides and MeCHK(BF<sub>3</sub>)CH<sub>2</sub>CN. Some I exhibit very low viscosities—a highly valuable property in many applications.

IT 813458-75-2P 813458-76-3P 813458-77-4P  
813458-78-5P 813458-79-6P 813458-80-9P  
813458-81-0P 813458-82-1P 813458-84-3P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation of imidazolium salts with a nitrile-functionalized anion as dual-functionalized ionic liqs.)

RN 813458-75-2 CAPLUS

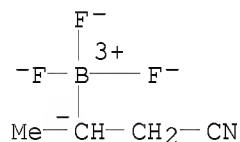
CN 1H-Imidazolium, 1-butyl-3-methyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

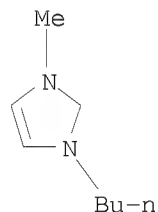
CCI CCS



CM 2

CRN 80432-08-2

CMF C8 H15 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-76-3 CAPLUS

CN 1H-Imidazolium, 1-methyl-3-(2-propenyl)-, (T-4)-(2-cyano-1-

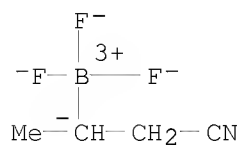
methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

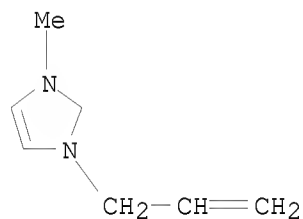
CCI CCS



CM 2

CRN 98806-09-8

CMF C7 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-77-4 CAPLUS

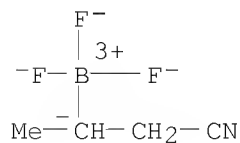
CN 1H-Imidazolium, 1-methyl-3-(2-propynyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

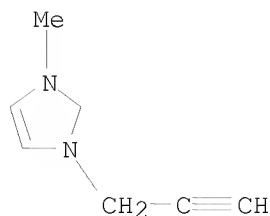
CCI CCS



CM 2

CRN 98795-20-1

CMF C7 H9 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-78-5 CAPLUS

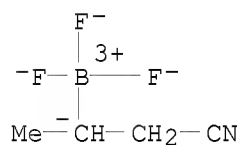
CN 1H-Imidazolium, 1-(3-carboxypropyl)-3-methyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

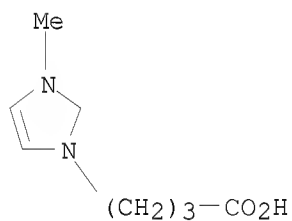
CCI CCS



CM 2

CRN 805228-44-8

CMF C8 H13 N2 O2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-79-6 CAPLUS

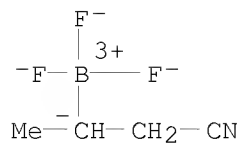
CN 1H-Imidazolium, 1-(3-cyanopropyl)-3-methyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

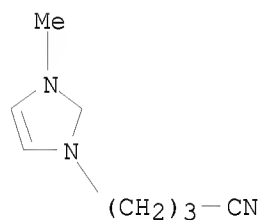
CCI CCS



CM 2

CRN 683224-97-7

CMF C8 H12 N3



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-80-9 CAPLUS

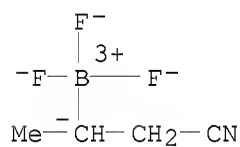
CN 1H-Imidazolium, 1,3-di-2-propenyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

CCI CCS

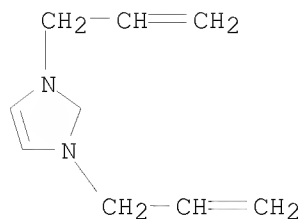


CM 2

CRN 67711-50-6

CMF C9 H13 N2





ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-81-0 CAPLUS

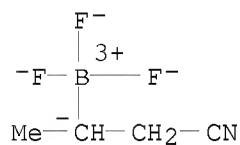
CN 1H-Imidazolium, 1,3-di-2-propynyl-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

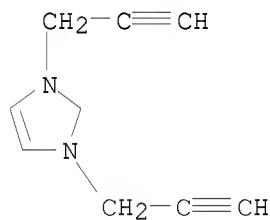
CCI CCS



CM 2

CRN 682743-95-9

CMF C9 H9 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 813458-82-1 CAPLUS

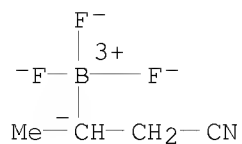
CN 1H-Imidazolium, 1,3-bis(3-carboxypropyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-74-1

CMF C4 H6 B F3 N

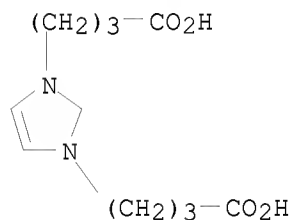
CCI CCS



CM 2

CRN 805228-50-6

CMF C11 H17 N2 O4



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

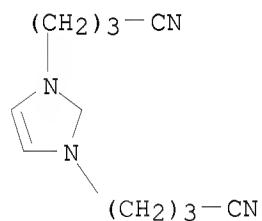
RN 813458-84-3 CAPLUS

CN 1H-Imidazolium, 1,3-bis(3-cyanopropyl)-, (T-4)-(2-cyano-1-methylethyl)trifluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 813458-83-2

CMF C11 H15 N4



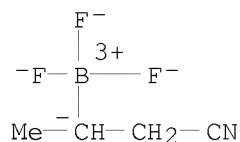
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

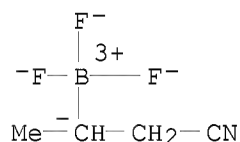
CRN 813458-74-1

CMF C4 H6 B F3 N

CCI CCS



IT 813458-71-8P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (preparation of imidazolium salts with a nitrile-functionalized anion as  
 dual-functionalized ionic liqs.)  
 RN 813458-71-8 CAPLUS  
 CN Borate(1-), (2-cyano-1-methylethyl)trifluoro-, potassium, (T-4)- (9CI)  
 (CA INDEX NAME)

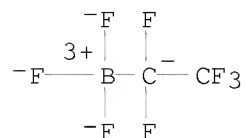


● K<sup>+</sup>

RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 23 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2004:586270 CAPLUS <<LOGINID::20080215>>  
 DN 141:243610  
 TI A new class of hydrophobic ionic liquids:  
 Trialkyl(2-methoxyethyl)ammonium perfluoroethyltrifluoroborate  
 AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki  
 CS Special Division of Green Life Technology, National Institute of Advanced  
 Industrial Science and Technology, Osaka, 563-8577, Japan  
 SO Chemistry Letters (2004), 33(7), 886-887  
 CODEN: CMLTAG; ISSN: 0366-7022  
 PB Chemical Society of Japan  
 DT Journal  
 LA English  
 OS CASREACT 141:243610  
 AB New hydrophobic ionic liqs. consisting of  
 trialkyl(2-methoxyethyl)ammonium ([R1R2R3NCH2CH2OCH3]<sup>+</sup>, R1, R2, R3 = CH3  
 or C2H5) cation and perfluoroethyltrifluoroborate ([C2F5BF3]<sup>-</sup>) anion were  
 prepared by neutralization of aqueous [R1R2R3NCH2CH2OCH3][OH] with aqueous  
 H[C2F5BF3]. The new [C2F5BF3]<sup>-</sup>-based ionic liqs. show  
 much lower m.ps. and viscosities (58-86 cP at 25°), hence higher  
 ionic conductivities, than the [BF4]<sup>-</sup>-based ones.  
 IT 685090-44-2  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (neutralization reaction of trialkyl(methoxyethyl)ammonium hydroxide  
 with hydrogen trifluoro(pentafluoroethyl)borate to give  
 perfluoroethyltrifluoroborate derivs. as hydrophobic ionic  
 liqs.)

RN 685090-44-2 CAPLUS  
 CN Borate(1-), trifluoro(pentafluoroethyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



● H<sup>+</sup>

IT 749879-29-6P 749879-30-9P 749879-31-0P  
 749879-32-1P  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (preparation and ionic conductivities of hydrophobic ionic liqs. consisting of trialkyl(methoxyethyl)ammonium perfluoroethyltrifluoroborate)

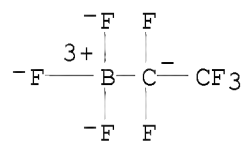
RN 749879-29-6 CAPLUS  
 CN Ethanaminium, 2-methoxy-N,N,N-trimethyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 390750-62-6

CMF C2 B F8

CCI CCS



CM 2

CRN 25728-47-6

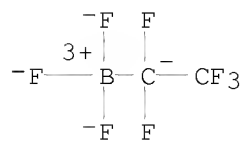
CMF C6 H16 N O

Me<sub>3</sub><sup>+</sup>N-CH<sub>2</sub>-CH<sub>2</sub>-OMe

RN 749879-30-9 CAPLUS  
 CN Ethanaminium, N-ethyl-2-methoxy-N,N-dimethyl-, (T-4)-trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

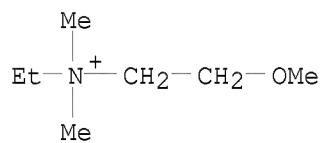
CM 1

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS



CM 2

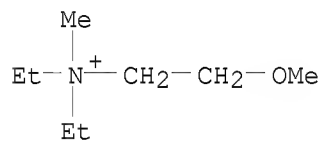
CRN 101853-27-4  
CMF C7 H18 N O



RN 749879-31-0 CAPLUS  
CN Ethanaminium, N,N-diethyl-2-methoxy-N-methyl-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

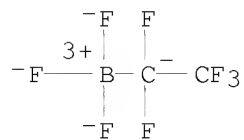
CM 1

CRN 464927-71-7  
CMF C8 H20 N O



CM 2

CRN 390750-62-6  
CMF C2 B F8  
CCI CCS



RN 749879-32-1 CAPLUS  
CN Ethanaminium, N,N,N-triethyl-2-methoxy-, (T-4)-  
trifluoro(pentafluoroethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 464927-73-9

CMF C9 H22 N O

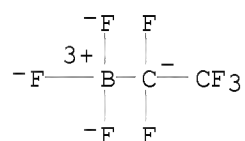
$\text{Et}_3\text{N}^+\text{---CH}_2\text{---CH}_2\text{---OMe}$

CM 2

CRN 390750-62-6

CMF C2 B F8

CCI CCS



RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 24 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2004:497357 CAPLUS <<LOGINID::20080215>>  
DN 141:215972  
TI Low-viscous, low-melting, hydrophobic ionic liquids:  
1-Alkyl-3-methylimidazolium trifluoromethyltrifluoroborate  
AU Zhou, Zhi-Bin; Matsumoto, Hajime; Tatsumi, Kuniaki  
CS Special Division of Green Life Technology, National Institute of Advanced  
Industrial Science and Technology, Osaka, 563-8577, Japan  
SO Chemistry Letters (2004), 33(6), 680-681  
CODEN: CMLTAG; ISSN: 0366-7022  
PB Chemical Society of Japan  
DT Journal  
LA English  
OS CASREACT 141:215972  
AB New hydrophobic ionic liqs., 1-alkyl-3-methylimidazolium (alkyl = Me, Et, Pr, Bu, hexyl) (trifluoromethyl)trifluoroborate ([CF<sub>3</sub>BF<sub>3</sub>]<sup>-</sup>), were synthesized by a metathesis reaction between 1-alkyl-3-methylimidazolium halide and K[CF<sub>3</sub>BF<sub>3</sub>]. All these new ionic liqs. exhibit low viscosities (26-77 cP at 25 °C) and low m.ps., resulting in high conductivities correspondingly. The lowest viscosity was exhibited by 1,3-dimethyl-1H-imidazolium trifluoro(trifluoromethyl)borate (I). I also possessed a high conductivity of 15.5 mS/cm. It was suggested that an anion of medium size, such as trifluoro(trifluoromethyl)borate, enhances the conductivity of ionic liqs. 1-Ethyl-3-methylimidazolium trifluoro(trifluoromethyl)borate exhibited higher conductivities than the

corresponding tetrafluoroborate, especially in low temperature regions. The possible applications of these (alkyl)(methyl)imidazolium trifluoro(trifluoromethyl)borate toward double layer capacitors, other electrolytes and electrochem. devices, was mentioned.

IT 681856-28-0P, 1-Ethyl-3-methylimidazolium trifluoro(trifluoromethyl)borate 741677-66-7P, 1,3-Dimethyl-1H-imidazolium trifluoro(trifluoromethyl)borate 741677-67-8P 741677-68-9P, 1-Butyl-3-methylimidazolium trifluoro(trifluoromethyl)borate 741677-69-0P, 1-Hexyl-3-methylimidazolium trifluoro(trifluoromethyl)borate

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation of (alkyl)(methyl)imidazolium trifluoro(trifluoromethyl)borate derivs. and study of their properties as low-viscous, low-melting, hydrophobic ionic liqs. with high conductivity)

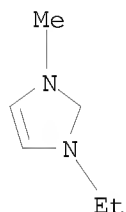
RN 681856-28-0 CAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 65039-03-4

CMF C6 H11 N2



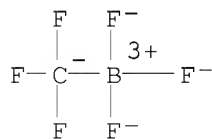
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



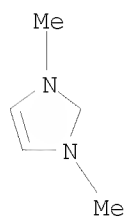
RN 741677-66-7 CAPLUS

CN 1H-Imidazolium, 1,3-dimethyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 45470-32-4

CMF C5 H9 N2



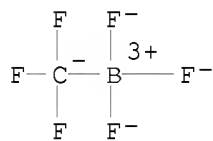
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 44629-17-6

CMF C B F6

CCI CCS



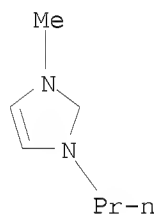
RN 741677-67-8 CAPLUS

CN 1H-Imidazolium, 1-methyl-3-propyl-, (T-4)-trifluoro(trifluoromethyl)borate  
(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 80432-06-0

CMF C7 H13 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

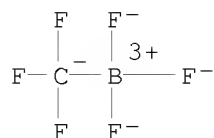
CM 2

CRN 44629-17-6

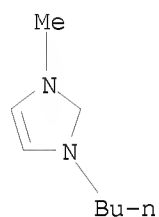
CMF C B F6

CCI CCS



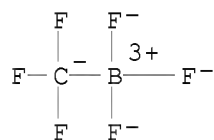


RN 741677-68-9 CAPLUS  
 CN 1H-Imidazolium, 1-butyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 80432-08-2  
 CMF C8 H15 N2

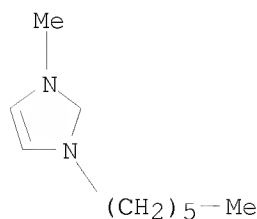


ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2  
 CRN 44629-17-6  
 CMF C B F6  
 CCI CCS



RN 741677-69-0 CAPLUS  
 CN 1H-Imidazolium, 1-hexyl-3-methyl-, (T-4)-trifluoro(trifluoromethyl)borate(1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 85100-82-9  
 CMF C10 H19 N2



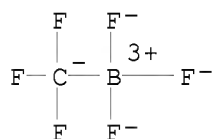
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

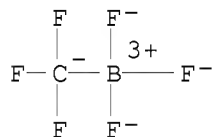
CRN 44629-17-6

CMF C B F6

CCI CCS



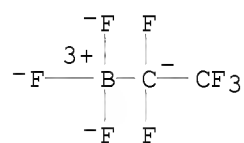
IT 42298-15-7, Potassium trifluoro(trifluoromethyl)borate(1-)  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of (alkyl)(methyl)imidazolium trifluoro(trifluoromethyl)borate  
 derivs. and study of their properties as low-viscous, low-melting,  
 hydrophobic ionic liqs. with high conductivity)  
 RN 42298-15-7 CAPLUS  
 CN Borate(1-), trifluoro(trifluoromethyl)-, potassium, (T-4)- (9CI) (CA  
 INDEX NAME)



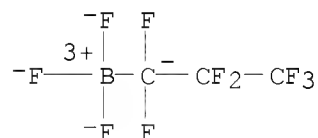
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 25 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
 AN 2004:153820 CAPLUS <<LOGINID::20080215>>  
 DN 140:374874  
 TI New hydrophobic ionic liquids based on  
 perfluoroalkyltrifluoroborate anions  
 AU Zhou, Zhi-Bin; Takeda, Masayuki; Ue, Makoto  
 CS Battery Materials Laboratory, Mitsubishi Chemical Group Science and  
 Technology Research Center, Inc., Inashiki, Ibaraki, 300-0332, Japan

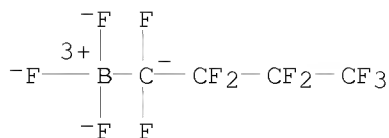
SO Journal of Fluorine Chemistry (2004), 125(3), 471-476  
 CODEN: JFLCAR; ISSN: 0022-1139  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 OS CASREACT 140:374874  
 AB New hydrophobic ionic liqs., 1-ethyl-3-methylimidazolium (EMI+) perfluoroalkyltrifluoroborate ([RfBF3]-) (Rf = C2F5, n-C3F7, and n-C4F9) were prepared in high yield and purity by facile neutralization of 1-ethyl-3-methylimidazolium (EMI+) methylcarbonate (MeOCO2-) with aqueous Hsolv.[RfBF3]solv. solns. All the salts prepared were characterized by 19F, 1H, 11B NMR, MS and elemental anal., and thermal and electrochem. properties of these salts have been measured. [EMI][C2F5BF3] melted at lower temperature (-1 °C) than [EMI][BF4] (13 °C), resulting in higher conductivity at low temperature Its application to double-layer capacitors (DLCs) was examined  
 IT 685090-44-2 685090-45-3 685090-46-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (neutralization reaction with 1-ethyl-3-methylimidazolium methylcarbonate)  
 RN 685090-44-2 CAPLUS  
 CN Borate(1-), trifluoro(pentafluoroethyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



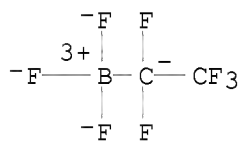
RN 685090-45-3 CAPLUS  
 CN Borate(1-), trifluoro(heptafluoropropyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



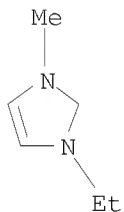
RN 685090-46-4 CAPLUS  
 CN Borate(1-), trifluoro(nonafluorobutyl)-, hydrogen, (T-4)- (9CI) (CA INDEX NAME)



IT 685090-47-5P  
 RL: DEV (Device component use); PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (preparation of new hydrophobic ionic liqs. based on perfluoroalkyltrifluoroborate anions, their thermal and electrochem. properties, and application to double-layer capacitors)  
 RN 685090-47-5 CAPLUS  
 CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(pentafluoroethyl)borate (1-) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 390750-62-6  
 CMF C2 B F8  
 CCI CCS



CM 2  
 CRN 65039-03-4  
 CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE  
 IT 685090-48-6P 685090-49-7P  
 RL: PRP (Properties); PUR (Purification or recovery); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of new hydrophobic ionic liqs. based on  
perfluoroalkyltrifluoroborate anions, their thermal and electrochem.  
properties, and application to double-layer capacitors)

RN 685090-48-6 CAPLUS

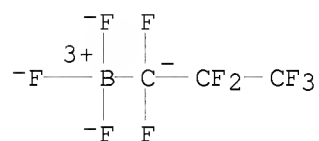
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(heptafluoropropyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-74-9

CMF C3 B F10

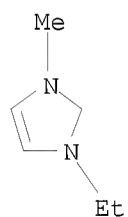
CCI CCS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 685090-49-7 CAPLUS

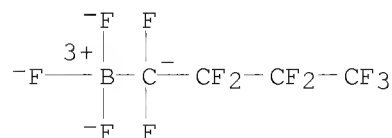
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (T-4)-trifluoro(nonafluorobutyl)borate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 658698-75-0

CMF C4 B F12

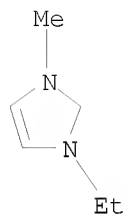
CCI CCS



CM 2

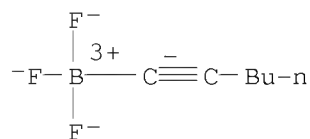
CRN 65039-03-4

CMF C6 H11 N2



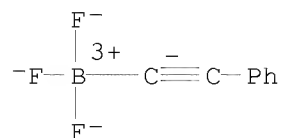
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE  
RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 26 OF 26 CAPLUS COPYRIGHT 2008 ACS on STN  
AN 2003:1001878 CAPLUS <<LOGINID::20080215>>  
DN 140:217065  
TI The use of potassium alkynyltrifluoroborates in Mannich reactions  
AU Kabalka, George W.; Venkataiah, Bollu; Dong, Gang  
CS Department of Chemistry, The University of Tennessee, Knoxville, TN,  
37996-1600, USA  
SO Tetrahedron Letters (2004), 45(4), 729-731  
CODEN: TELEAY; ISSN: 0040-4039  
PB Elsevier Science B.V.  
DT Journal  
LA English  
OS CASREACT 140:217065  
AB Potassium alkynyltrifluoroborates react with amines and salicylaldehydes  
in the presence of benzoic acid to generate highly functionalized amines.  
Ionic liqs. such as butylmethyylimidazolium  
tetrafluoroborate (BmimBF<sub>4</sub>) are suitable solvents for the reaction.  
IT 244301-59-5 485338-93-0 485339-09-1  
664374-21-4 664374-22-5 664374-23-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Mannich reaction of potassium alkynyltrifluoroborates with amines and  
salicylaldehydes using ionic liqs. solvent for  
preparation substituted aryl propargyl amines)  
RN 244301-59-5 CAPLUS  
CN Borate(1-), trifluoro-1-hexynyl-, potassium, (T-4)- (9CI) (CA INDEX NAME)



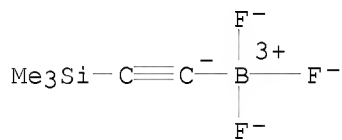
RN 485338-93-0 CAPLUS

CN Borate(1-), trifluoro(phenylethynyl)-, potassium, (T-4)- (9CI) (CA INDEX NAME)



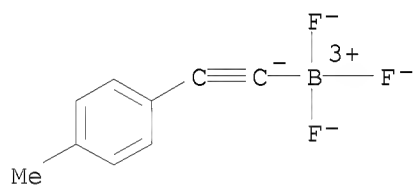
RN 485339-09-1 CAPLUS

CN Borate(1-), trifluoro[(trimethylsilyl)ethynyl]-, potassium, (T-4)- (9CI) (CA INDEX NAME)



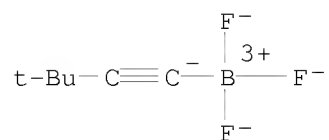
RN 664374-21-4 CAPLUS

CN Borate(1-), trifluoro[(4-methylphenyl)ethynyl]-, potassium, (T-4)- (9CI) (CA INDEX NAME)

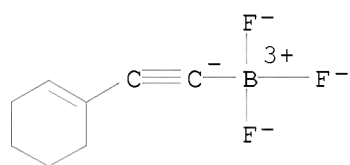


RN 664374-22-5 CAPLUS

CN Borate(1-), (3,3-dimethyl-1-butynyl)trifluoro-, potassium, (T-4)- (9CI) (CA INDEX NAME)



RN 664374-23-6 CAPLUS  
 CN Borate(1-), (1-cyclohexen-1-ylethynyl)trifluoro-, potassium, (T-4)- (9CI)  
 (CA INDEX NAME)



RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT